Nagagami Forest
Independent Forest Audit
2002-2007

kbm
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1.0 Executive Summary

This audit report for the Nagagami Forest (the Forest) is the result of an Independent Forest Audit (IFA) conducted by KBM Forestry Consultants Inc. under contract to the Ontario Ministry of Natural Resources (MNR). MNR's Class Environmental Assessment Approval for Forest Management on Crown Lands in Ontario (2003) (EA Declaration Order) requires that all Crown forests in Ontario undergo an IFA. Regulation 160/04 of the *Crown Forest Sustainability Act* (CFSA) sets out the specific requirements for conducting the audits.

Nagagami Forest Management Ltd. (NFML) is the Sustainable Forest Licence (SFL) holder and, together with MNR Wawa District, were the principal auditees. MNR Regional and corporate organizational units, and contractors are also considered auditees to the extent that forest management activities carried out by them are the subject of audit examination.

The audit covers the five-year period April 1, 2002 to March 31, 2007 and includes two Forest Management Plans (FMPs); specifically implementation of planned operations during the last four years of the 2001-06 Nagagami Forest FMP and planning of the 2006-11 Nagagami Forest FMP, including implementation of the plan during the first year.

The Nagagami Forest is located in the northern part of MNR's Wawa District and in its Northeast Region. NFML has held the SFL since May, 2004. At that time, Abitibi-Consolidated Company of Canada Inc. (ACI) relinquished its deemed SFL (previously held under Donohue Forest Products Inc.) and the SFL was transferred to NFML, which is a cooperative between Olav Haavaldsrud Timber Company, Weyerhaeuser, Columbia Forest Products and Longlac Wood Industries. Forest management planning and day-to-day management is done by Abitibi-Consolidated under contract to NFML.

The Crown managed portion of the Nagagami Forest is 443,600 ha in size, of which 380,701 ha is classified as Productive Forest Area. The major working groups on the Forest are black spruce (42%), poplar (30%), jack pine (11%), balsam fir (6%) and white birch (4%). Wood supply commitments for each of NFML's shareholders total approximately 265,000 m^3 annually, with Weyerhaeuser and Olav Haavaldsrud Timber Company accounting for nearly 87% of that.

The purpose of the IFA is to assess compliance to FMPs and legislated requirements, compare planned to actual activities including effectiveness, assess compliance to licence conditions, and the effectiveness of action plans resulting from previous audits. The EA Declaration Order also permits auditors to examine any matter directly related to forest management planning and forest management activities on the management unit.

Based on the audit, 30 Recommendations were made. Recommendations may arise from audit team observations of material non-conformances or may be developed to address situations in which the audit team identifies a significant lack of effectiveness in forest management activities. Key findings arising from the audit are discussed below.

The audit team found that forest sustainability, as assessed through the achievement of management objectives set in forest management plans, is being significantly impacted by access issues as they affect local recreational and Aboriginal forest users, and some small non-timber commercial operators. This is a long standing, very divisive issue on the Nagagami Forest to which a long-term solution must be found. Interestingly, the Report of Past Forest Operations and the Year 10 Annual Report were silent on whether the related FMP objectives were met. For users of forest access roads living in the Hornepayne area, the societal benefits associated with these management objectives have not been fully realized, and may in fact be diminishing. The mechanism used by MNR to deliver on many of its policy commitments is forest management planning, and road access to the Province's forests as planned, developed and decommissioned through forest management planning is fundamental to achieving these commitments in many cases. Partially addressed or unaddressed MNR policy positions and strategies, combined with a lack of funding for ongoing road maintenance have contributed to the general impasse. The audit team made recommendations and suggestions that may help bring resolution but ultimately it falls to Government to deal with this issue without delay.

MNR has not met its compliance inspection targets. The audit team considers this an important function of MNR and one that reflects on MNR's commitment to sustainable forest management. As such, a recommendation directs the District to meet its compliance obligations on the Nagagami Forest.

The audit team found that classification of young stands using ocular and large scale photography methods was incorrect in several examples viewed. As well, there is a need to reduce the amount of depleted area in preparation for the next FMP. Improvements must be made in both areas.

The audit team concluded that, with the exceptions noted in the audit report, management of the Nagagami Forest was in compliance with legislation, regulations and policies and was effective during the term of the audit. The Nagagami Forest was also managed in general compliance with the terms of SFL No. 550047 held by Nagagami Forest Management Ltd. Forest sustainability, as it applies to the forest environment, is being achieved as assessed through the Independent Forest Audit Process and Protocol. The audit team found aspects of forest sustainability related to meeting societal needs and expectations are not being fully met due to the long-standing, unresolved issue of road access for local forest users.

The audit team recommended that the Minister extend the term of the SFL for the Nagagami Forest.

Rod Seabrook, CEA(SFM), EMS(LA) – Lead Auditor on behalf of the Audit Team

2.0 Introduction

2.1 Audit Process

2.1.1 Purpose

The *Independent Forest Audit Process and Protocol* (IFAPP)[1] was developed by the Ontario Ministry of Natural Resources (MNR) to provide a comprehensive and consistent method of evaluating forest management activities on Crown land. The IFAPP states that the purpose of an Independent Forest Audit (IFA) is to:

- Assess the extent of forest management planning compliance with the *Forest Management Planning Manual*[2] (FMPM) and the *Crown Forest Sustainability Act*[3] (CFSA);
- Assess the extent of compliance of forest management activities with the CFSA, the Forest Management Plans (FMPs), the manuals approved under the CFSA and the applicable guides;
- Compare planned versus actual forest management activities;
- Assess the effectiveness of forest management activities in meeting the forest management objectives set out in the forest management plan, as measured in relation to the criteria established for the audit;
- Assess the effectiveness of any action plans implemented to remedy shortcomings revealed by a previous audit; and,
- Assess the licensee's compliance with the terms and conditions of the Sustainable Forest Licence (SFL).

Condition 28 of *MNR's Class Environmental Assessment Approval for Forest Management on Crown Lands in Ontario*[4] also allows auditors to examine any matter directly related to forest management planning and forest management activities on the management unit.

2.1.2 Audit Process Overview

The IFAPP contains eight guiding principles with 152 criteria and 403 audit procedures, 318 of which are potentially applicable to the Nagagami Forest (the Forest). The audit procedures serve as a framework to provide a structured approach to evaluating whether forest management activities meet the requirements governing forestry practices on Crown land in Ontario. Since the IFAPP contains procedures that pertain to the SFL holder and MNR, both parties are auditees.

The 2007 IFAPP requires auditing of 50% of the procedures categorized as administrative procedures associated with each of the eight guiding principles (see Section 2.1.4). The 50% selected by KBM were identified in the audit plan together with those "not audited".

A previous IFA was conducted for the Forest in 2002 for the 1997-02 term. Thirty-three recommendations arose from that audit and the actions to address the recommendations were examined during the course of this audit.

The audit process for the Forest consisted of six components:

A) Audit Plan[5]: KBM prepared an audit plan that described the schedule of audit activities, audit team members and participants, and auditing methods. The audit plan was submitted to MNR, Nagagami Forest Management Ltd. (NFML), the Forestry Futures Committee (FFC), and the Local Citizens Committee (LCC).

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[1] MNR. 2007. Independent Forest Audit Process and Protocol. 27 pp. + Appendices.

[2] MNR. 1996. Forest Management Planning Manual for Ontario's Crown Forests. Toronto. Queen's Printer for Ontario. 452 pp.
MNR. 2004. Forest Management Planning Manual for Ontario's Crown Forests. Toronto. Queen's Printer for Ontario. 440 pp.

[3] Crown Forest Sustainability Act, 1994, S.O. 1994 c. 25.

[4] MOE. 2003. MNR's Class Environmental Assessment Approval for Forest Management on Crown Lands in Ontario. 48 pp.

[5] KBM Forestry Consultants Inc. 2007. Nagagami Forest Independent Forest Audit Plan. 16 pp. + Appendices.

B) Public Notice and Public Survey: Public notices were placed in seven newspapers (*Thunder Bay Chronicle Journal, Wawatay News, Marathon Mercury, Hornepayne Jackfish Journal, Wawa Algoma News, Chapleau Express*, and *Hearst le Nord* (French)) soliciting public input on forest management activities on the Forest for the period under audit. A copy of the public notification is found in Appendix F. KBM prepared a one-page public survey that was distributed to all organizations and to 40% of the individuals named on the District mailing list provided by MNR. In addition, the public survey was posted and available for download from KBM's web site (www.kbm.on.ca). The purpose of the survey was to solicit public input and to provide respondents with an opportunity to identify and discuss any site-specific concerns on the Forest. A copy of the survey is located in Appendix G. There were seven responses to the survey process. A summary is presented in Appendix E.

C) Field Site Selection: KBM committed to a minimum sampling intensity of 10% of key field activities and operations conducted on the Forest, depending upon the type of activity. A stratified random sample of sites was chosen by the audit team to ensure that selected sites were representative of the activities conducted on the Forest during the audit term. Table 1 presents the sampling intensity of the field visits completed on the Forest. The extent of road maintenance was not reported so sampling is expressed as a percentage of planned maintenance.

Table 1. Audit Sampling Intensity for the Nagagami Forest.

Activity	Total Area/Number	Minimum Area/Number Sampled	Percent Sampled
Harvest (ha)	14,605	3,036	21
Artificial Regeneration (ha)	10,588	1,700	16
Natural Regeneration (ha)	5,779	632	11
Site Preparation (ha)	3,529	1,221	35
Tending (ha)	9,009	1,637	18
Area of Concern (AOC) Categories[1] (#)	19	13	68
Free-To-Grow (ha)	20,648	3,084	15
Category 9 Pits (#)	12	3	25
Road Construction (km)	24	6.2	26
Road Maintenance (km)	1378[2]	76	6
Water Crossings (#)	656	81	12
Specified Procedures Review[3] (ha)	7,799	1,801	23

[1] AOC categories refer to the different types of AOCs present on the Forest. Examples included riparian areas, cool water fisheries, moose aquatic feeding areas and osprey nests. Numerous AOCs were associated with most sites selected for review of harvest and renewal operations.

[2] Calculation of sample size is based on planned maintenance since actual maintenance distances are not reported in the Annual Reports.

[3] Specified Procedures Review involved the verification of maps, records, and fieldwork associated with Forest Renewal Trust Account expenditures for 2005-06.

D) Pre-audit Document Review: Prior to the site visit, the audit team reviewed documents provided by NFML and MNR including: the Nagagami Forest 2001-06 FMP and 2006-11 FMP, the 1997-01 Report of Past Forest Operations (RPFO), 2002-03 to 2006-07 Annual Work Schedules (AWSs), the 2002-03 to 2005-06 Annual

Reports (ARs), and the Comparison and Trend Analysis of Planned versus Actual Forest Operations (Trend Analysis Report (TAR)) prepared by NFML as a requirement of the IFA. Revisions were subsequently made to the Trend Analysis Report and the revised report reviewed.

E) On-Site Audit: The objectives of the field site visits were to confirm that activities were conducted according to plan, that they conformed to provincial laws, regulations, and guidelines, and that they were effective. The opening meeting was held in Hornepayne on September 24, 2007. The audit team conducted interviews and field visits from September 24-28, 2007, including discussions with members of the LCC, Aboriginal Community representatives, other key stakeholders, members of the public, and staff and shareholders of NFML, and MNR staff.

The audit team met with the LCC on the evening of September 24. The purpose of the meeting was to introduce the audit plan to the LCC and receive input. This meeting resulted in a number of comments being provided to the audit team regarding forest management. A member of the LCC participated in a portion of the field audit.

The audit team spent one day viewing field sites by road and one day by helicopter. Most of the selected field sites were accessed by helicopter since the helicopter provided rapid access and an aerial view to verify operational compliance with plans and reports.

A closing meeting for the audit was held in Wawa on Monday, October 1, 2007. This meeting provided a forum for the audit team to present and discuss preliminary audit results with NFML and MNR.

F) Final Report: The results of the audit are presented in conjunction with a brief description of the audit process and the forest licence area under review. An important distinction is made between Recommendations and Suggestions within the report. Recommendations draw attention to deficiencies in forest management that require corrective action. In most cases, Recommendations are the result of non-conformance to a law or policy, or specify a lack of effectiveness in forest management activities. Recommendations must be addressed in an Action Plan developed by the licensee and MNR as per Appendix E of the IFAPP. Suggestions are less serious in nature and provide advice for improving particular aspects of forest management. Auditees are not required to address Suggestions in the Action Plan, although the IFAPP encourages them to do so. Best Practices are identified if highly effective or novel approaches to various aspects of forest management are observed. Similarly, applications of established management approaches which achieve remarkable success may represent Best Practices.

2.1.3 The Audit Team

The audit was conducted by an independent audit team assembled by KBM Forestry Consultants Inc. under contract with MNR. The audit team consisted of five members:

- Rod Seabrook, CEA(SFM), EMS(LA), Lead Auditor; Wildlife/Ecology Auditor
- Liora Zimmerman, Planning Auditor
- Brad Chaulk, R.P.F., Harvesting Operations Auditor
- Laird Van Damme, R.P.F., Silviculture Auditor
- Keith Hautala, Forest Modelling Auditor

Audit team members (including administrative staff) and their responsibilities are described in Appendix B.

2.1.4 Guiding Principles

The IFAPP identifies the components of the audit process. There are eight guiding principles within the audit protocol (Appendix C). Each principle contains a series of criteria that guide the audit team in its assessment of achievement toward a given principle. Under each criterion, a number of procedures detail the assessment of auditee compliance and effectiveness. KBM assigns each of the applicable procedures to an auditor who, in turn, examines the evidence for conformity with the procedure.

2.2 Forest Management Context

2.2.1 Location of the Forest

The Nagagami Forest is licensed to NFML under SFL No. 550047. The Forest is located in the Northeast Region of MNR, within the Wawa District (Figure 1).

2.2.2 Description of the Forest

NFML has held the Sustainable Forest Licence (SFL) since May, 2004. At that time, Abitibi-Consolidated Company of Canada Inc. (ACI)[6] relinquished its deemed SFL (previously held under Donohue Forest Products Inc.) and it was transferred to NFML (a cooperative between Olav Haavaldsrud Timber Company, Weyerhaeuser, Columbia Forest Products and Longlac Wood Industries). Forest management planning is done by ACI under contract to NFML. References to NFML in this report include staff of ACI working on the Nagagami Forest.

The Crown managed portion of the Nagagami Forest is 443,600 ha in size of which 380,701 ha is Productive Forest Area. The major working groups on the Forest are black spruce (42%), poplar (30%), jack pine (11%), balsam fir (6%) and white birch (4%). Wood supply commitments for each of NFML's shareholders total approximately 265,000 m^3 annually, with Weyerhaeuser and Olav Haavaldsrud Timber Company accounting for nearly 87% of that.

A fire at the Haavaldsrud sawmill in the summer of 2006 caused operations to be suspended, leaving the conifer harvest well short of the target level since that time. The mill resumed production in March 2007. Utilization of the proposed harvest area was 87% during the audit term.

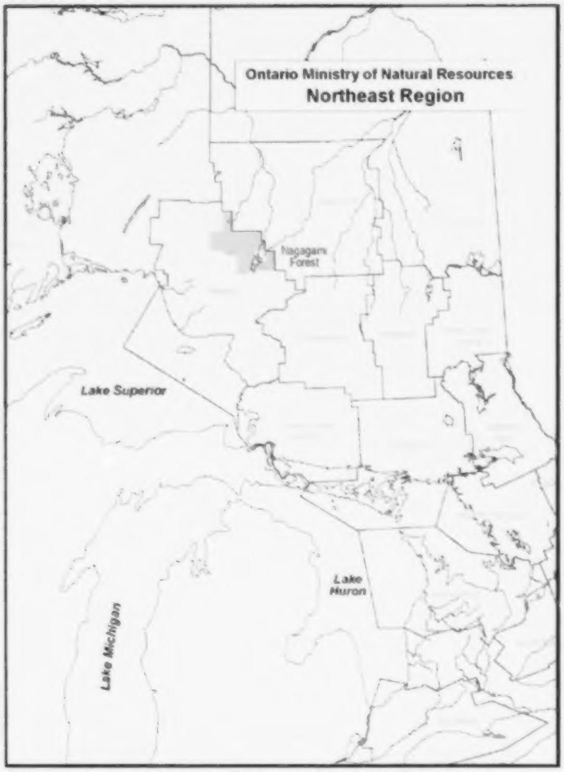

Figure 1. Location of the Nagagami Forest.

2.2.3 Forest Management Issues

The IFAPP requires a review of high priority aspects (HPAs) of the auditees' systems or activities. The auditor examines these aspects in detail during the review of documents and the site visit. HPAs can include significant management challenges that are inherent to the unit or can be specific issues that have arisen during forest management planning or plan implementation.

Following discussions with NFML and MNR Wawa District staff a candidate list of HPAs was developed. The HPAs are associated with the 2002 IFA which had raised a number of concerns. As a result of the audit, it was recommended that the licence be shortened to a 15-year term. Of particular concern to the auditors was the lack of corporate support both by the SFL manager and MNR, which they attributed to many of the deficiencies. From the perspective of both the SFL and the MNR representatives, three issues remain. These are: remote tourism issues, access issues, and hardwood utilization issues including its contribution to two-stage harvesting. The following summarizes these issues:

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[6] Abitibi-Consolidated merged with Bowater in 2007 to become AbitibiBowater.

- Enlisting the cooperation of remote tourism interests was recommended in the 2002 IFA. Although a remote tourism representative was included on the planning team for the 2006-11 FMP, six bump-up requests were initiated by remote tourism interests. All six bump-up requests were denied by the Ministry of the Environment (MOE).

- Access was an issue on the Nagagami Forest for many years. Many local residents oppose road closures, decommissioning and abandonment. The Hornepayne Forest Road Committee was established in October of 2005. Its stated objective is to be involved at every level of the decision making process that would decide which local forest roads would be decommissioned or abandoned in the Nagagami Forest area. The Nagagami Forest LCC in its Statement of Agreement/Disagreement of the 2006-11 FMP, expressed "...partial agreement with the steering committee's direction to maintain the status quo on the current road use management strategies..." These groups are illustrative of the concerns that local residents and road-based recreational users of the Forest have with respect to access.

- Harvesting with more than one pass was seen as disadvantageous in the 2002 IFA for reasons of higher logging costs, less volume per logging pass, delays to silvicultural treatments and road decommissioning, and risk of damage to advanced regeneration and snag trees.

3.0 Summary of Audit Findings

3.1 Commitment

NFML has an Environmental & Sustainable Forest Management Policy, dated January 2005. The Policy commits NFML to continual improvement, prevention of pollution and respecting of laws and regulations as part of sustainable forest management. It lists the various strategies employed by NFML to implement the Policy and is included as an attachment to Memoranda of Agreement with contractors. NFML has not yet achieved certification to a recognized sustainable forestry standard. Correspondence regarding this subject between NFML and MNR Forest Management Branch (FMB) indicated that the current financial situation faced by the company has not permitted it to proceed with certification at this time.

NFML has a contractual agreement with ACI to provide all of the forest managerial services on the Nagagami Forest. ACI is registered to ISO 14001, an environmental management standard which applies to ACI staff and contractors operating on the Nagagami Forest. Periodic inspections of contractor operations are conducted, corrective actions are identified where issues are found, and information is reported internally by ACI staff quarterly.

Good commitment to compliance was demonstrated by NFML during the term. Noteworthy were the extra compliance training sessions provided and actions taken as a result of an independent compliance review completed in 2005. This is fully discussed in Section 3.6.1.

MNR commitment to compliance varied during the term. In each of 2005-06 and 2006-07, a minimal number of compliance inspections were completed. Compliance details are contained in Section 3.6.1. The audit team believes that this significant under-achievement of compliance inspections indicates a lack of commitment by MNR. Hence, a recommendation is made.

Recommendation 1: MNR Wawa District must meet its compliance commitments on the Nagagami Forest, as developed and described in their annual compliance plans.

3.2 Public Participation

3.2.1 Local Citizens Committee

Organization and Membership

The LCC Terms of Reference, which was used in the preparation of the 2006-11 FMP, was signed in the spring of 2004, prior to the phase-in requirements of the 2004 FMPM. The Terms of Reference was not updated to reflect the new requirements; however, this was not necessary as it met the requirements of the new FMPM in terms of LCC membership and organization.

The District Manager updated the membership of the LCC to the extent possible based on local availability. This is challenging in a small community, and was perhaps limited further by the fact that all meetings are held in Hornepayne during the day. The 2002 IFA suggested that the LCC reconsider the timing of their meetings; clearly the LCC has chosen to continue with day-time meetings, therefore this audit team will make no further comment on the topic. Efforts to recruit new members included advertisements on a local TV channel and in newspapers, and the LCC Chair also made efforts to recruit new members from the community.

Although the 2004 LCC Terms of Reference included the requirements related to membership and organization, the purpose of the LCC as defined by the FMPM was not fully addressed. However, a new Terms of Reference was approved in 2007 and this version included all of the required components of the LCC's purpose as defined by the 2004 FMPM.

Function and Conduct of the Committee

The activities of the LCC must be conducted in an open and inclusive manner reflective of the range and balance of interests on the Committee. All interviewees agreed that members of the LCC speak their opinions openly. Several interviewees speculated that tourism representatives might feel out-numbered, as most members oppose road closures and access restrictions, which are often associated with remote tourism. However, the remote tourism representative and alternate appeared to be quite vocal based on the audit team's attendance at a meeting, although it was not clear to the audit team that their voices are heard as willingly as the voices of other members. In addition, although some remote tourism operators may be undaunted by the conflict surrounding access, others indicated that the negative view in which tourism is seen by many members of the community is a deterrent to their membership on the LCC.

The LCC Reports were not always available on time, and MNR indicated that it often had to prompt the LCC to provide the Reports, although funding was provided to hire a secretary for the Committee. However, LCC Reports were provided in time for inclusion in the final FMP.

Although documentation of the nomination process could not be found, LCC minutes indicated that the group supported the selected LCC representative to the 2006-11 FMP planning team. The planning team representative attended every meeting except two, for which an alternate was arranged. This level of attendance by a volunteer is commendable.

The LCC statement on the FMP contributors' page conformed to the statement in the LCC Report. However, the final LCC Report did not include a list of members. Based on a review of LCC membership at the time of final FMP submission, the list of members in the FMP was incorrect; a number of members listed had not participated for over two years, and several new members were missing from the list. This editorial error could have been avoided if the LCC Report had included an up-to-date list of members.

Recommendation 2: The Nagagami Forest planning team must ensure that the 2011 FMP includes an up-to-date list of LCC members on the contributors' page.

Suggestion 1: MNR should ensure that the LCC Report includes an up-to-date list of members prior to the Report's inclusion as supplementary documentation to the 2011 FMP.

LCC minutes and the expressed views of some members indicated that the LCC feels that its effectiveness is limited by its budget, which was an on-going concern during plan preparation. One member explained that, because of the budget constraints, the LCC *only exists* and feels like nothing more than a required step in the FMP process. However, during the planning process the LCC meetings were generally well attended and turn-over was relatively low; two members resigned and a few past members from the previous planning period lost their places due to lack of attendance, but several new members were added and most members stayed constant throughout the plan development period. A few interviewees felt that the LCC spent too much time on fish stocking exercises, rather than FMP participation. However, this is a role that was given to the LCC by MNR many years ago, although MNR no longer funds these activities.

The 2002 IFA made a suggestion regarding the LCC's budgetary concerns and MNR's commitment to the LCC. MNR recently indicated that funding will only be available to LCC's in FMP mode, which sends a clear message to the LCC regarding MNR's expectations from the Committee. Currently the LCC is frustrated by what it sees as a lack of financial support for the achievement of its goals, which were approved with the Terms of Reference's inclusion of several additional (not required by the FMPM) LCC activities (e.g. *proposals which enhance fish and wildlife populations will be encouraged*). If MNR can no longer support these goals, MNR could make additional efforts to manage the LCC's expectations regarding its role, and the Terms of Reference may be a workable tool for doing so.

Based on the LCC meeting attended by the audit team, it seemed that the anger the Committee felt in response to road closures was unfairly directed towards individual members of the planning team. It is not surprising that people would express frustrations in this way. Evidence suggests that this feeling of frustration is common in the community in general and not limited to the LCC. However, it concerned the audit team to see that the access issue has created a significant amount of tension and division in the community.

In addition, the release of the North Algoma Wilderness Outfitters Association (NAWOA) proposal from the planning team to the LCC, and subsequently to a local newspaper, was of major concern to the audit team. This is discussed in Section 3.3.1.

In general, the audit team felt that the issues surrounding the conduct and function of the LCC are related to the unresolved access issue on the Forest, and that a resolution of that issue would also resolve the conflict within and surrounding the LCC. Therefore, recommendations and suggestions on this topic are made in the context of the access issue, discussed in Section 3.3.1.

Committee Involvement in Planning

Planning team members provided the LCC with a presentation on the management alternatives and objectives, which were then discussed, although one LCC member indicated that they did not really understand this information. The LCC also reviewed the values maps and in a few cases suggested minor changes. In addition, the planning team's Hornepayne Aboriginal Community representative provided the LCC with updates on the development of the Aboriginal values map.

There was no exception monitoring during the audit period; however, the LCC was kept up-to-date on plan implementation and other monitoring activities.

The LCC planning team representative was involved in the issue resolution and individual environmental assessment request processes, including attendance at meetings at both the District Manager and the Regional Director stages of issue resolution. Meeting minutes indicated that the Chair spoke on behalf of the LCC at the District Manager stage issue resolution meeting, in addition to the planning team representative. The planning team representative also provided letters describing her perspective on the issues to both the District Manager and the Regional Director at the appropriate stages in the issue resolution process.

Amendment documentation (amendment/revision forms) indicated that the LCC was in agreement with all amendments, although not all forms indicated that a category was recommended by the LCC. Similarly, the master list of amendments stated *LCC in agreement* but did not indicate if the LCC provided advice on the category of the amendment. However, interviews revealed that amendments are always brought to the LCC to request a recommendation on the amendment categorization, and this is documented as *in agreement* once the amendment is processed.

LCC minutes indicated that the plan author presented each AWS to the LCC. Interviews confirmed that this occurred prior to the approval of the AWS, and that the maps of aerial spray and slash pile burning were reviewed with the LCC. In addition, the plan author took the LCC on a field tour of pre- and post-treatment aerial spray sites to illustrate the importance of this management tool. The plan author also provided the LCC with updates on the progress of AWS implementation at every meeting. Both of these activities represent commendable extra efforts on the part of NFML.

In summary, LCC members and their representative to the planning team were actively involved in the Committee, fulfilled their role as defined by the FMPM, were actively engaged in the planning process, and are obviously passionate about their community and its relationship with the Forest. However, the function of the Committee was impaired by the conflict surrounding the unresolved access issue, discussed in Section 3.3.1.

3.2.2 FMP Standard Public Consultation Process

Most of the comments received during the planning process related to the access issue and many were in response to the published NAWOA proposal, including hundreds of form letters opposing the proposal. This is discussed in Section 3.3.1.

All issue resolution and individual environmental assessment requests were received after the phase-in date for the 2004 FMPM. Based on a review of the issue resolution documentation, MNR was very careful to ensure that the 2004 FMPM phase-in provisions were applied, including appending excerpts from the new manual to their correspondence. Although the First Information Centre notice used the 1996 FMPM statement regarding the timing of individual environmental assessment requests, this was corrected in all subsequent notices. In addition, based on review of individual environmental assessment request documentation, the 2004 FMPM process was followed as required by the phase-in provisions.

In summary, the planning team followed the requirements of the standard public consultation process, including the phase-in provisions of the 2004 FMPM. Although some of the audit team's concerns are related to public consultation, these concerns are outlined in Sections 3.3.1 and 3.7.1 in relation to the access issue and other commercial users.

General public consultation is also discussed in relation to planning team activities in Section 3.3.1.

3.2.3 Native Peoples' Consultation

At the Invitation to Participate stage, separate letters were sent to the Chief of Constance Lake First Nation and the Hornepayne Aboriginal Community inviting them to participate either in the native consultation process or the regular consultation process, and inviting them to appoint a representative to the planning team.

The Hornepayne Aboriginal Community chose to appoint a planning team member and to participate in the native consultation process, as is discussed further below.

Constance Lake First Nation did not respond to the Invitation to Participate. No further separate notices were sent to Constance Lake, although a plan summary and maps were provided after the First Information Centre. Regular (public) notices were sent to the First Nation at each stage of plan production, and the Chief responded to the notice of public inspection of the final FMP. His letter indicated that the First Nation did not recognize MNR's consultation process and would like to discuss the development of a consultation approach that would be appropriate for the First Nation.

The notices as sent to Constance Lake First Nation met the requirements of the 1996 FMPM. In addition, it should be noted that according to the MNR First Nation Liaison he had made continued efforts to contact representatives of the First Nation by phone, and when successful was informed that the First Nation was busy with other projects and could not get involved in the Nagagami Forest FMP at that time. Although the audit team does not doubt that these efforts were made, there were no memos to file summarizing these phone calls or the cited discussion (refer to Recommendation 3). However, the Chief's response to the public plan inspection notice suggests that further separate notices or letters would have been more appropriate, although they were not required. The 2004 FMPM requires that follow-up actions be taken after the invitation to develop a consultation approach. In addition to this new requirement, which will be in place for the development of the next forest management plan, the audit team provides the following:

Suggestion 2: MNR should make continued efforts to encourage the involvement of Constance Lake First Nation at all stages of development of the 2011 FMP, including notices and/or letters designed specifically for the First Nation, rather than general public notices.

At all stages of plan production, separate notices were sent to the Hornepayne Aboriginal Community in English. The planning team representative for the community indicated that the community did not request notices in an Aboriginal language. However, the FMPM requires that notices be provided in an Aboriginal language *unless requested otherwise*. MNR could not find documentation confirming that this was not required (refer to Recommendation 3).

In all other respects, the planning team met the requirements of the native consultation process with the Hornepayne Aboriginal Community. All notices were separate and created specifically for the community. Community meetings were planned to present the First and Second Information Centre material to the community at a feast/community meeting, as requested by the community. Notices indicated that the first community meeting was an opportunity to review the Native Background Information Report, and that the second meeting was an opportunity to review the Report on the Protection of Identified Native Values. Community representatives were not able to attend the third scheduled community meeting due a community emergency. The plan author provided the Chief with maps and an FMP summary, but the meeting could not be rescheduled. Following plan approval, the MNR First Nation Liaison sent a letter to the Chief enclosing the notice regarding the approved FMP inspection period. In addition, the plan author indicated that AWS maps are sent to the Chief every year.

In addition to documentation gaps mentioned previously, MNR was unable to provide evidence that Recommendation 5 from the 2002 IFA had been addressed (re-advisement of Condition 34 to be sent to the Hornepayne Aboriginal Community). This is discussed further in Section 3.8; however, based on the cumulative observations related to Aboriginal consultation documentation, the audit team provides the following:

Recommendation 3: MNR must ensure that all Aboriginal consultation efforts are properly documented and filed for future reference.

The values identified by the Hornepayne Aboriginal Community were documented on confidential maps and considered during the production of the FMP. The planning team representative had no major issues with the process; however, he indicated that many members of the Aboriginal Community were concerned about road closures. In fact, the Chief of the Hornepayne Aboriginal Community sent a letter to MNR regarding this issue (April 2005). The letter stated that road closures have a negative impact on their community, as roads are used to gain access to traditional hunting and trapping grounds and traditional foods, and for Elders to reach areas containing traditional medicines and places to hold seasonal fasts. MNR responded indicating that there would be no restrictions on the community's rights to access traditional areas using traditional means, but that the use of forest access roads is not considered a traditional means. The response regarding "traditional" access means was also provided to members of the public and stakeholders who brought forward access-related concerns. This response is discussed further in Section 3.7.1.

Although Aboriginal values were identified and protected, the audit team feels that MNR's response to the Chief's concerns about road closures was not sufficient and did not promote discussion or understanding of the concerns brought forth. This is related to the general concerns regarding access and the achievement of management objectives, and is discussed further in Section 3.7.1.

3.2.4 Annual Work Schedule Public Inspection

AWS notices were posted at least 15 days in advance of operations commencing. Direct notices were mailed to the entire mailing list. Unless otherwise agreed to with affected First Nations, AWS notices must be posted in Aboriginal media. Notices were not posted in Aboriginal media during the audit term and, as noted in the previous section, there was no documented evidence that a custom consultation approach, including release from this requirement, was agreed to with affected First Nation(s).

Recommendation 4: MNR must post notices in local Aboriginal media unless affected First Nation(s) have specifically agreed to another approach.

The public was notified of planned aerial spray and slash pile burning projects through required media and direct mail outs. Timing and content of the notices met requirements with one exception. Maps accompanying the planned aerial spray notices did not sufficiently detail the location of the project as is required by the 2004 FMPM. Several forests were included in the aerial spray notices, further reducing their effectiveness.

Recommendation 5: MNR must ensure that maps accompanying aerial spray notices sufficiently detail the location of planned operations.

The slash pile notices featuring only the Nagagami Forest had tiny dots indicating the general area of the program. A similar style may suffice for the aerial spray program; however, MNR should consider other options to meet this requirement, such as constructing a web-based map system and identifying the web-site in appropriate notices.

3.3 Forest Management Planning

3.3.1 Planning Team Activities

A Terms of Reference was prepared for the planning team, and was approved by both the Regional Director (June 28, 2004) and the District Manager (June 21, 2004). The planning team membership met FMPM requirements and the plan author was a Registered Professional Forester. The background information made available to the planning team was sufficient to support planning. A steering committee was formed and most planning team members felt that the steering committee was effective at helping the team move forward with difficult issues. As mentioned in Section 3.2.2, the general format of the planning and public consultation process was followed by the planning team, and the team maintained a reasonable adherence to the timelines, which is commendable considering the issues.

The methods used to communicate with the public were reasonable to achieve a broad dissemination of information. MNR published the required notices in three local papers: the *Hornepayne Jackfish News*, the *Wawa Algoma News Review* and the *Hearst Le Nord* (French). Notices were also mailed to those on the MNR mailing list. These actions were taken at all stages of the FMP development process. The MNR mailing list included all of the groups required by the FMPM.

Based on the audit team's review of the correspondence files, it does not appear that any requests for meetings were made by the general public, aside from those held in the context of the issue resolution process. However, numerous comments and form letters were submitted protesting road closures and/or access restrictions; 62% of comments received during the planning process were related to roads and access issues (205 out of 305 comments). The majority of comments were received from 'individuals' rather than representatives of defined user groups (anglers and hunters, cottagers, etc.), indicating that the issues were of concern to the general public, in addition to specific stakeholder groups.

A review of the correspondence file found a few examples of comments from the Second Information Centre for which no response was filed. However, MNR had electronic files of these responses. This suggests that a response was sent, although it was not printed for the correspondence binder. In general it appeared to the audit team that public correspondence was well organized, and although this missing piece indicates that there may be room for improvement, the current system did result in all letters from the public receiving a response from MNR and/or the plan author (i.e. the purpose of the system was achieved). In addition, the letter responding to the form letters protesting the NAWOA proposal was clearly written and explained the situation well.

Based on discussions with the plan author and other members of the planning team, the MNR District Manager, the LCC, and other interested parties, the planning team addressed the values identified for the Forest and incorporated the public concerns and experience learned from past operations into the FMP to the extent possible. A few concerns are noted by the audit team; however, most interviewees agreed that the planning team functioned well given the difficulties associated with the access issue. This is supported by the completion of the plan stages with reasonable adherence to the timeframes specified in the Terms of Reference. However, the minutes from the planning team meetings did not capture the discussions or opinions expressed, but rather functioned as a list of action items. For most of the plan development period, the plan author was responsible for taking minutes at planning team meetings. The audit team believes that actively participating at meetings makes it extremely challenging to produce detailed minutes. Therefore, the audit team provides the following:

Suggestion 3: MNR and NFML should ensure that minutes provide an accurate reflection of planning team meetings.

MNR and NFML may wish to alternate using an administrative assistant from each organization, or combining funds to hire an independent secretary on contract.

The planning team in general functioned well; however, the team was unable to reach an agreement on any issues related to changes to road use management strategies. This resulted in the steering committee requiring the team to carry forward the road use management strategies from the previous FMP, with one exception. Although the decision to maintain the status quo allowed the team to move forward with plan preparation, it also prevented any progress in the resolution of the access issue.

The release of the NAWOA proposal, which was subsequently published in a local newspaper as mentioned previously, contributed significantly to the issue. The release of this document resulted in the assumption by the public that the proposal would be accepted by the planning team as it stood. This is unlikely, and was apparently not the intent of the authors of the proposal. This event led to unprecedented levels of attendance at information centres, the receipt of hundreds of form letters opposing the proposal, and an increase in criticism directed towards the tourism industry and individuals on the planning team.

Planning team members are often provided with sensitive information and/or documents with the expectation that this information will remain within the planning team, at least until the team has discussed it and agreed upon an appropriate format for its release to the public. However, this was not expressly stated in the Terms of Reference as a responsibility of all planning team members. This is likely relevant to other forests in the Province, in addition to the Nagagami Forest. Therefore, Suggestion 4: Corporate MNR should consider adding a requirement that future planning team Terms of Reference include a statement regarding planning team members' responsibilities in relation to confidentiality of information.

Major Issues Encountered During Plan Production

Several planning issues were of concern to the audit team, and all of them are related to the unresolved access issue. In fact, the unresolved access issue – which is over 30 years old – pervaded FMP preparation. Although there has not been an individual environmental assessment (IEA) request by local forest road users, the public comments received during the planning process, the high levels of information centre attendance, and the emotional nature of responses to this issue clearly indicate that this issue is of major concern to a significant number of local people.

During the field audit, a protest was held on Highway 101 (at Wawa), in front of a local remote tourism business. Approximately 180 protesters (a significant number given the local population) carried signs reading "Crown land is our land", "access for all", and "MNR selling us out."[7] In addition, some tourism operators indicated that they are hesitant to join the LCC because of local hostility related to access, planning team members have been faced with public outrage on a regular basis, and a few interviewees referred to the occurrence of personal threats. In addition to the challenges encountered in the FMP planning process, the access issue on the Nagagami Forest has resulted in divisive and harmful impacts on the community of Hornepayne.

Background

There are approximately 42,116 ha of water bodies within the Nagagami Forest (including Crown and Patent Land). Of this area, approximately 29,405 ha are contained within designated remote tourism lakes. Therefore, 70% of the water bodies on the Nagagami Forest are not accessible by the general public (except by traditional methods such as canoe routes). This includes 89% of water bodies greater than 100 ha in size. Although Nagagamisis Provincial Park (containing the significantly-sized Nagagamisis Lake), north of the Forest, is open to the public and is accessible by road, its status as a park limits some forms of recreation (e.g. motor boats are not permitted on Park Lake[8]), and a fee is charged for day and over-night use[9]. In addition, the park is gated in the off-season[10].

There are 455 km of primary and 292 km of secondary/branch roads on the Nagagami Forest. Of these, 384 km are impacted by road use restrictions to protect remote tourism (~50%), some having multiple restrictions. However, 191 km are covered by *Public Lands Act*[11] (PLA) signs prohibiting access to a specific lake (the road may be used for other purposes), 107 km are closed to vehicular traffic during the autumn moose hunt period (2 weeks), and 86 km are covered by signs prohibiting access to a specific lake from May 1st to October 21st. An additional 9 km is impacted by wildlife management restrictions (no moose hunting permitted October-November). Although a significant percentage of the road base is subject to access restrictions, no roads are closed absolutely.

These numbers do not capture road abandonment once the road is past its term of use for forest management. In the past the forest industry often left roads for "natural abandonment," but more recently environmental and liability concerns have resulted in physical decommissioning of roads, including water crossing removals, on roads that are no longer required for forest management. This developing trend is consistent across the Province. One tourism operator suggested that people do not differentiate between abandonment by the forest industry, and road closures for tourism. Based on the fact that no roads are absolutely closed to the public, the audit team believes this may be a correct interpretation of the situation.

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[7] The Sault Star. September 24, 2007. Share the land; protesters peeved at Crown land use take beefs to streets. by Shirley Mills.

[8] http://www.ontarioparks.com/english/naga-multiple.html

[9] http://www.parkreports.com/fees/fees.php?year=2008

[10] http://www.ontarioparks.com/english/naga-facilities.html

[11] Public Lands Act. R.S.O. 1990, c. p.43.

FMP and Policy Context

An example of the access issue that was raised during the field visit was related to a specific primary road – the McDuff Road, which originates just outside Hornepayne, near the Haavaldsrud mill. Several planning terms ago, the LCC, with MNR agreement, installed public access points from the McDuff Road to the Shekak River and the Kabinakagami River (via Expansion/Kabi Lake Road). As a result of terrain features, Kabinakagami Lake (a remote tourism lake) cannot be accessed from this point on the Kabinakagami River. However, a portion of the McDuff Road and the Expansion Road are currently scheduled for abandonment, as they are no longer required by the forest industry. The abandonment of this portion of the McDuff Road and the Expansion/Kabi Lake Road will remove access to the MNR-approved public access point on the Kabinakagami River, as well as access to three remote cottage/residences (these dwellings are accessible by the river, which is accessed via the road), all of which are recognized values in the Natural Resource Values Information System (NRVIS).

The separation between issues related to road access as land use management concerns versus forest management concerns is not distinct. In many areas, including the Nagagami Forest, decisions to construct, maintain and close roads are made and vetted through the public as part of the forest management planning process. The final decision to abandon the McDuff Road took place during the forest management planning process for the 2006 FMP. While it followed due process as part of the FMP, this road serves to illustrate the issue at hand. Although part of the access issue relates to conflict between local people and tourism, this issue is also related to the closure of roads that do not impact tourism, but are simply no longer required for forestry. Such roads, if maintained, could potentially provide an opportunity for local recreation while posing no risk to remote tourism. This section discusses opportunities related to these roads and their relationship to MNR policy.

The road access issue on the Nagagami Forest relates to the achievement of socio-economic FMP objectives, and social sustainability (Section 3.7). For users of forest access roads living in the Hornepayne area, the socio-economic benefits associated with these management objectives have not been fully realized, and may in fact be diminishing. The current state of the access issue represents a situation that does not fully support the social sustainability of the area – one of the three components of overall forest sustainability as defined by the CFSA. Therefore, since the vehicle used by MNR to deliver on many of its policy commitments is forest management planning, and this issue clearly relates to FMP objectives set in the 2001-06 and 2006-11 Nagagami Forest FMPs and the achievement of sustainability, this issue was of major concern to the audit team, and therefore is discussed in depth.

The Forest Roads and Water Crossing Initiative (FRWCI) Task Team Report[12] states that *"when an individual road network is no longer required for forest operations purposes, the Forest Industry will decide if it wishes to maintain the road network or transfer responsibility to the Crown..."*

This direction is also included in the 2004 FMPM. Although neither of these sources of direction were required considerations during the development of the 2006-11 FMP, they will be required for the development of the 2011 FMP. While the focus of the FRWCI Task Team Report was on issues of liability for environmental and public safety concerns associated with abandonment of forest access roads, the report acknowledged that *systematic decommissioning of forest roads* (no longer required by the forest industry) *would have enormous economic, social and political implications.*

Beyond 2000[13], a source of direction for the 2006 FMP, includes the following statement: *MNR's management efforts are directed at nine desired outcomes [including that] a variety of natural resource-based recreation*

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[12] Roads and Water Crossing Initiative Task Team Report. 2003. Findings and Recommendations pertaining to Liability Assessment Determination of Responsibility Planning Implications. 51 pp.

[13] MNR. 2000. Beyond 2000. 20 pp.

opportunities are provided. Presumably "a variety" of recreation opportunities would include both road-based and non-road-based recreation.

MNR does not itself build roads to provide general access to Crown land but rather relies on roads developed for forest management to fulfill that role. While the primary intent of these roads may appear to be forest management because of their association with forestry activities, in reality these are multi-purpose roads that are key to delivery of MNR's various commitments regarding benefits to Ontarians from public forests, including recreational and non-timber commercial benefits. The benefit to the public of primary roads developed and maintained by the forest industry was recently recognized by MNR and funding provided to the forest industry to offset some costs associated with maintenance of primary and branch roads. Public use of such roads was the basis of the premise that the funding could not be construed as a subsidy to the forest industry.

The 2004 FMPM requires that all road use management strategies indicate if it is the intent of the SFL holder to transfer the responsibility for the road to MNR, and, where applicable, MNR's preliminary indication on whether the road will be abandoned. Under this system, the industry no longer abandons roads – instead, roads are transferred to MNR, which may then decide to maintain or abandon the road, or to transfer responsibility to another party. MNR may choose to abandon a road for a number of reasons. However, the implication in the FMPM is that *some* roads will be accepted and maintained by the Crown (this option is also presented in the FRWCI Task Team Report). Such actions would lend support to MNR's policy goals regarding the provision of recreational opportunities, given that multi-purpose roads currently provide many of these opportunities to the people of Ontario.

Suggestion 5: Wawa District MNR should consider maintaining one or more of the roads identified for transfer to MNR in the 2011 FMP that are of interest to local people and do not create conflicts with remote tourism.

This suggestion is particularly relevant given the existence of the Hornepayne Roads Committee, a public group which has already indicated that it is interested in accepting responsibility for roads, but requires more time to become incorporated and arrange for the required insurance policy. However, even if this Committee assumes full liability for the road, the cost of maintenance is likely more than can be managed by a small public group, and would require a joint effort from MNR and the Committee.

In October 2006, MNR Wawa District initiated the Crown Land Use Atlas Harmonization project (CLUAH), a public process to review existing land use direction for unregulated provincial Crown lands and waters within Wawa District to *ensure the balance of social, economic, and ecological sustainability, and to reduce access conflicts in other district planning processes.* The results of CLUAH are intended to *set the direction to guide access management while ensuring ecosystem sustainability. Industry users who depend on the forest will have more certainty and stability and, by extension, so will the recreational users, resource-based tourism and local communities.* The project is scheduled for completion in May 2008; however, no indication of its potential outcome has been made available to date. In fact, interviews suggested that arguments related to access have dominated the discussion and impeded its progress. Therefore, the audit team cannot make any assumptions about the outcomes of this process and provides the following:

Recommendation 6: MNR Wawa District, in cooperation with Corporate MNR and MNR Northeast Region, must take decisive action to resolve the access issue on the Nagagami Forest in a manner that fully supports MNR's higher-level policies, such as *Beyond 2000* (now *Our Sustainable Future*), as well as forest management objectives 3.4.2.2.2 and 3.4.2.2.3 as set in the 2001-06 and 2006-11 FMPs.

Action must be initiated immediately in order for it to improve the circumstances under which the 2011 FMP is developed. This recommendation is partially directed towards Corporate MNR because, in order to support its broad policy statements, Corporate MNR should make resources available to enable district offices to act upon their policies.

New Roads

Issues can develop when intentions are not made clear. Thirty or more years ago, when some of the roads on the Nagagami Forest were constructed, the fact that they would be closed to the public at some future date was likely not made clear or even considered. However, the planning team for the 2011 FMP has an opportunity to manage public expectations in relation to new roads, and hopefully ensure that similar problems do not develop in the future.

The 2004 FMPM includes several requirements related to the documentation of use management strategies for new roads. The audit team believes that, in addition to these requirements, making the expected term of use clear to the public prior to road construction would help to prevent the development of new access issues. This also relates to the use of clear language, which may be more easily understood than statements regarding "intent to transfer."

Suggestion 6: Corporate MNR should provide guidance to planning teams that ensures the expected (estimated) term of use for all proposed new primary and branch roads is clearly documented and provided to the public.

3.3.2 Resource Stewardship Agreements

The plan author sent out letters inviting all licensed resource based tourism establishments located in the forest management unit, or in adjacent management units, to express their interest in negotiating a Resource Stewardship Agreement (RSA). This was done in an appropriate timeframe. An RSA scoping meeting was held, with presentations given by MNR, on May 4, 2004 at the Wawa Legion. The audit team concludes that every reasonable effort was made to pursue RSA development. In fact, draft RSAs were negotiated but could not be included in the FMP as they introduced new access issues too late in the process (following the Second Information Centre). A Third Information Centre was held to present the draft FMP, and the plan author presented draft road use management strategies (which were based upon the confidential draft RSAs) at this time, as a separate component of the event. According to NFML and MNR representatives this was received with public outcry. Therefore, the MNR District Manager did not allow the draft RSA conditions to be incorporated into the FMP. Although the timing of the completion of the draft RSAs was unfortunate, NFML showed due diligence in continuing to negotiate agreements until it was no longer possible to do so.

Generic Area of Concern (AOC) prescriptions were included in the FMP for tourism values, and these were based largely upon the District's Tourism Strategy, although NFML did discuss and obtain agreement with interested tourism operators regarding the prescriptions. The detail contained in this strategy was surprising to the audit team, and although it indicates that all of the conditions are subject to mutual agreement of the principal parties, and the approved AOCs include variations on the Strategy, it is not clear that a totally different approach would be acceptable to MNR. As a basic summary, for remote tourism values, the District Tourism Strategy prescribes a 90-120 m reserve (no harvest) around the lake, as well as an additional 500 m aesthetics buffer (modified operations to minimize the visual impact of harvesting), plus a *minimal visual disturbance zone* up to 1 km from the lake (depending on view) in which a minimum of 50% crown cover must be maintained. In addition, a 2 km zone is prescribed for any further areas visible from the lake, in which only 25% of the timber can be harvested within any five year term. On remote outpost camps and lodges, a reserve of 300 m from the property boundary of an outpost camp, and 400 m from a lodge, will be maintained. Further, a 1.5 km noise buffer on remote lakes prevents harvest, road construction and hauling from the opening of the walleye season until after the second week of the moose hunt. Mechanical site preparation is permitted during the frost-free season but only between the hours of 8 am and 6 pm during the timing restriction window. For remote lodges, this 1.5 km buffer is extended to 2.5 km. Finally, a restricting sign or gate is placed a minimum of 3 km from the remote tourism lake.

The Wawa District's Tourism Strategy is more restrictive to the forest industry and public access than the audit team has seen in any other district. However, several representatives of the remote tourism industry remain dissatisfied with the level of protection for their business.

In many other areas of the Province, roads and forest operations were established prior to remote tourism businesses, and tourism operators may be happy with a "perception of wilderness" as agreed upon in the tourism-forest industry *Memorandum of Understanding*[14] (MOU). However, in this area tourism operators became accustomed to working with real remoteness, and over the past 30 to 40 years, this value has disappeared. Tourism businesses that were established in the 1940s and 1950s have witnessed this change and loss of remoteness, and now have to grapple with a dwindling resource (i.e. remoteness) and public hostility resulting from a volatile access issue. However, in the same way that remaining publicly accessible recreation opportunities must be capitalized upon, remote tourism must make the most of the remaining remoteness, or "perception of wilderness," that is available to them.

MNR's *Management Guidelines for Forestry and Resource-Based Tourism*[15] recommends that *new and creative techniques, which may evolve over time, should be encouraged as long as they do not contravene existing legislation* and that *unlike values addressed in other forest management guidelines such as moose or osprey, the tourist industry is best able to speak for itself and to identify its needs on a case-by-case basis.* In order for tourism operators to make the most of the remaining remoteness, or "perception of wilderness", flexibility should be created to allow for creative solutions. In addition, interviews indicated that many tourism operators have a good working relationship with NFML, which sets the stage for successful negotiations. The Wawa District Tourism Strategy, as part of the *Crown Land Use Policy Atlas* (CLUPA), represents higher level direction than that found in the tourism guide. However, the audit team notes that the District Tourism Strategy, as it outlines and requires specific prescriptions, conflicts with more recent MNR direction (the tourism guide) and with the spirit of negotiation contained in the tourism and forest industry MOU. Therefore,

Suggestion 7: MNR Wawa District should consider revising the District Tourism Strategy to reflect the spirit of negotiation contained in the tourism-forest industry Memorandum of Understanding and MNR's 2001 *Management Guidelines for Forestry and Resource-based Tourism.*

3.3.3 Source of Direction

The digital version of the 2006-11 FMP Supplementary Documentation provided to the audit team contained a list of Implementation Guides referenced during planning. The list was dated March 2, 2001 whereas a more recent list (February 17, 2003) should have been available at the start of planning. The more-current list contained some additional documents (e.g. revised Forest Compliance Handbook). According to MNR, the up-to-date list was present in paper copies of plan documentation.

Recommendation 7: The Nagagami Forest planning team must ensure that the most current sources of direction are available and referenced correctly in FMP documentation.

An exception to the *Silvicultural Guide to Managing for Black Spruce, Jack Pine and Aspen on Boreal Forest Ecosites in Ontario*[16] (Silvicultural Guide), that was not documented as such, was observed during the field audit. Guide direction in this case was not followed (see Section 3.3.9).

3.3.4 Introduction

The FMP contained the required Statement of Environmental Values briefing note and spoke to the seven standardized questions developed by MNR to guide planning teams in addressing this requirement.

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[14] 2001. Tourism and Forestry Industry Memorandum of Understanding. 3 pp. + Appendix.

[15] Forest Management Branch. 2001. Management Guidelines for Forestry and Resource-based Tourism. Ont. Min. Nat. Res., Queen's Printer for Ontario, Toronto, ON. 24 pp.

[16] MNR. 1997. Silvicultural Guide to Managing for Black Spruce, Jack Pine and Aspen on Boreal Forest Ecosites in Ontario, Version 1.1. Ont. Min. Nat. Res., Queen's Printer for Ontario, Toronto. 3 books. 822 pp.

3.3.5 Management Unit Description

The forest description in terms of both physical geography and the historic forest condition could be improved upon in the next plan. There are unusually rich soils on many portions of the Forest that support above-average timber yields. These soils are highly competitive and require tending to maintain conifer dominance. These characteristics, when properly described in the management plan help rationalize management choices.

The section of the FMP describing the historic forest condition provided a good comparison of the 1974 forest inventory against the 1993 inventory updated to 2001. However the text copied from the 2001-06 FMP merely described what the graphs showed without much interpretation. Some counterintuitive results were left unexplained. For example, where did all of the five year old forest reported to exist in 1974 go in 2001? It should have been still in the 0-40 age class but instead it would seem that the photo interpreter's pulled it into mature forest classes in 1996. Perhaps it wasn't five years old in 1974.

In addition, free-to-grow (FTG) surveys were not up-to-date (see Section 3.6.1) and some 60,000 ha of younger forest are unaccounted for. Figure 2 shows a probable age class distribution (1974+30) that assumes that the 1974 photography scaled at 1:15,840 had better estimates of age than the 1990 photographs scaled at 1:20,000. It is possible that the age class gap referred to in the FMP may be an artefact of inventory methods and photo interpretation bias.

The 1993 Forest Resource Inventory (FRI) used in the development of the 2006-11 FMP consisted of 1:20,000 scale black and white aerial photography taken in 1990. The FRI was updated with MNR components, which were timely, complete and actual with forecast depletions and accruals being incorporated as required. A list of updates to the inventory was included in the FMP text as required with two notable exceptions. First, the stand growing function used for the inventory was not discussed. Second, the ecosystem classification update completed and used in the inventory was not correctly detailed.

Recommendation 8: NFML must ensure that the 2011 FMP is thoroughly reviewed for errors and contains all required text, including:

- **a) an updated forest description section with greater levels of detail describing the physical geography, historic forest condition, and forest inventory updating procedures,**
- **b) discussion of variances between planned and forecast values provided in FMP tables (see Section 3.3.7),**
- **c) planned exceptions recorded at the beginning of the plan.**

Information on timber and non-timber values is maintained by MNR. Updating was conducted during planning for areas associated with preferred harvest blocks. A total of 18 general areas of proposed operations were denoted on survey maps and records indicated that aerial surveys were undertaken in March 2005. This information was updated for all areas and was transferred to MNR's values tracking database (NRVIS) to update that system for planning purposes. Values information is updated regularly. Examples of correspondence were examined regarding discovery of previously unidentified stick nests. One occurrence (two nests) was reported by NFML staff following completion of harvest operations while another (three nests) was reported by District Conservation staff. Information for these new values was entered into NRVIS.

Table FMP-5 presented changes in preferred habitat on the Nagagami Forest between the previous and current FMPs. The wildlife habitat matrix was updated between plans and the new matrix values were applied to the 2001-06 FMP values although an actual comparison of changes was not presented using the updated information. Forest units changed somewhat from the 2001-06 to 2006-11 FMPs and a new FRI was used during planning. These variables contribute to making direct comparison of habitat changes from one plan to the next somewhat tenuous. The 2004 FMPM does not require a comparison of habitat levels between past and current plans but instead requires projections of habitat availability into the future for the selected management alternative.

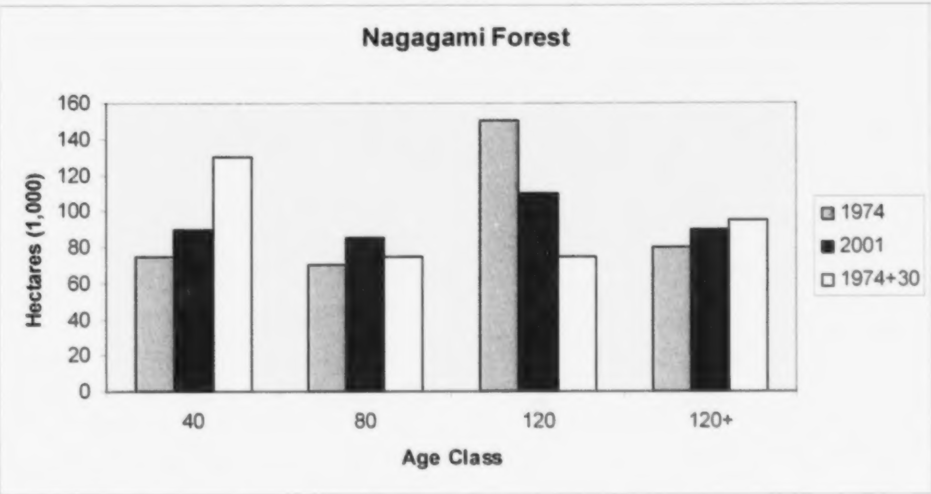

Figure 2. Probable age class distribution for the Nagagami Forest.

MNR provided socio-economic profiles which included the required information on demographics, migration and the local economy (employment by sector). The profiles did not include information on industrial or non-industrial uses or investment intentions; however, this type of information is not provided by Statistics Canada, which is the source of information for the demographic profile documents.

The FMP text description of the socio-economic context outlined the industrial and non-industrial uses of the Forest and their importance to communities. This discussion did not include a description of population distribution by age and gender; however, all other aspects were addressed, and this information was provided in the supplementary documentation (demographic profile documents).

The FMP text also included the information required regarding the economic environment. In the preparation of this component of the FMP, MNR distributed surveys by mail and at information centres to collect additional information. This represented a significant and commendable extra effort on the part of MNR and the planning team. FMP text included information on investment intention for the forest sector but not for non-industrial users; however, current expenditures were described. Investment intentions are generally considered sensitive information by businesses, and this information is often unavailable in FMPs.

In summary, all of the available required information was provided in the socio-economic description. This information was relevant to the development of the FMP and served to illustrate the importance of forest operations in terms of adding economic value to the communities through employment in forest operations and at mills (via wood supplied to local mills).

3.3.6 Objectives and Strategies/Management Alternatives

Objectives in the 2006-11 FMP addressed forest diversity, socio-economics, forest cover and silviculture topics as required by the CFSA and FMPM. Each of the objectives contained one or more targets with associated strategies to ensure their achievement.

The FMP provided an excellent discussion of the assessment of forest sustainability and comparison of objective achievement between management scenarios. A total of seven management alternatives and numerous other scoping runs were analyzed and documented during plan development. These included the mandatory management alternatives as required by the FMPM. The mandatory alternatives consisted of scenarios to test the timber production potential of the Forest with an infinite level of silviculture spending; timber production potential with balanced silviculture spending; and the ability of the Forest to meet anticipated industrial demand. A Natural

Benchmark (Null) scenario, where no harvest occurs and wildfire is the only source of forest depletion and renewal, was used to provide a basis for calculating allowable bounds of variation for some quantitative objects such as wildlife habitat, forest unit area, and old forest cover.

The 2006-11 FMP management alternatives were analyzed with the Strategic Forest Management Model (SFMM), with results and input assumptions discussed in the FMP text and Analysis Package. Model assumptions (e.g. yield curves, fire cycles, natural succession, accumulating reserve area) appeared reasonable and made good use of available information and direction. For example, slight modifications were made to regional standard forest units and yield curves to reflect the conditions found on the Forest.

The FMP text, in conjunction with the Analysis Package, provided a detailed history of model development and selection of the Selected Management Alternative based on a scoring system that compared management alternatives. The FMP provided a good summary of changes between 2001 and 2006 SFMM models and its associated impacts on indicators of sustainability.

The 2006-11 FMP illustrated the challenges in developing a strategic forest plan that must carefully balance a multitude of competing values. Plan documentation and interviews conducted during the audit revealed that great effort was put forward by both NFML and MNR personnel to develop a forest model that best achieved long-term forest sustainability. An issue of particular concern was poplar wood supply in the immediate and near terms of the FMP. Several management alternatives and many scoping runs investigated ways to mitigate near-term volume declines through various changes to model parameters. It is important to note that not only was this work completed, but these modelling efforts and their associated analysis were well documented.

The MNR Area Forester ran the required Socio-economic Impact Model (SEIM) and provided a presentation of results to the planning team and the LCC. In addition, a detailed report was completed and included as supplementary documentation to the FMP. In the analysis, management alternatives and utilization values from ARs were compared in separate runs, broken down by mill, and potential impacts were discussed. This analysis went beyond the requirements of the FMPM and showed that MNR took the assessment of these impacts seriously. Interviews indicated that this information was considered when selecting a preliminary preferred management alternative.

The 2006-11 FMP contained planning for the upgrade of three roads to primary specifications and the inclusion of two branch roads from the 2001-06 FMP that were not constructed. Two new branch roads were also planned for construction in the 2006-11 FMP. Documentation for these roads, including map products, met requirements. Supplementary documentation contained a discussion of each primary and secondary road planned for the period. Alternatives were provided for most roads although some were restricted to one alternative based mainly on topographic restrictions. Use management documentation requirements were also met.

The audit team questioned the need for the Gum Lake Road to be built as a primary road. Although extending from an existing primary road, this planned primary road will only access a relatively small wood basket on the periphery of the Forest. During the field tour for the audit, NFML staff indicated that a new corridor may be selected for this road based on a review of topography in the area. This discovery should have occurred during original planning for this road. The nature and relative number of road location amendments/revisions during the audit term also suggests the need for more thorough roads planning during plan development, particularly for primary roads.

Suggestion 8: NFML should complete thorough roads planning for the 2011 FMP.

3.3.7 Operational Planning

Area of Concern planning was done to protect values on the Forest (e.g. stick nests, tourism, cultural heritage sites, water quality). Prescriptions typically followed guideline requirements and standardized buffers were developed to protect the identified value; for example, slope-based reserves ranging from 30 m to 90 m in width to protect fisheries and water quality values. In some cases a specific, unique prescription was developed where no guideline direction was available. For example, a 120 m no harvest reserve was applied to proposed harvest blocks adjacent to Highway 631. In such cases, alternative prescriptions were developed and analysed and a rationale given for the selected prescription. Most prescriptions did not allow for construction of roads within the AOC. In cases where tertiary roads were permitted, conditions such as road standards, locations and abandonment requirements were stipulated.

One prescription was identified as an exception to the osprey guideline. The prescription acknowledged new information and direction regarding forestry impacts on osprey nests and nesting birds and was designed to reflect the anticipated changes to the osprey guide. None of the allocated stands associated with the exception were operated during the audit term.

MNR Wawa District collected information on the quality of moose aquatic feeding areas (MAFAs) using aerial survey techniques and had assigned a quality ranking to each area surveyed, including areas that were examined but that had no value as a MAFA. These latter areas were carried forward onto the values maps and identified as MAFAs, leading to an error during planning that resulted in application of the MAFA AOC prescription to areas that were not MAFAs. Field observations by the audit team (see Section 3.4.1) and an examination of a sample of MAFA survey records at the District office confirmed the error.

The MAFA prescription requires a 120 m standing timber reserve within which no timber harvesting is permitted. As a consequence, areas of eligible timber that would otherwise have been included in adjoining harvest blocks were reserved.

Recommendation 9: MNR must ensure that, for MAFA values, only information on confirmed MAFAs is recorded on the wildlife values map.

According to the FMP and through discussions with the Area Biologist, higher quality MAFAs typically receive protection, although lower ranked MAFAs may on occasion be given protection, depending on the relative overall availability of good MAFAs. The plan author, however, stated that no distinction was made during planning between the different rankings of MAFAs and therefore the prescription was applied to all sites identified as MAFAs on the values map. This latter comment is supported by the findings above.

Recommendation 10: The Nagagami Forest planning team must ensure that, for future FMPs, the detailed ranking information for MAFAs is considered during planning.

The 2002 IFA recommended MNR make improvements in collection of fisheries and caribou values information. The audit team reviewed work in this area. MNR has not conducted recent stream surveys and continues to rely on the knowledge of District staff to update fisheries information. The Additional Fisheries Values map, now entered into NRVIS, captures this information and includes projections of the extent of cold water fisheries based on areas of known occurrence. The prescriptions for cold vs. cool water fisheries are identical except for more restrictive timing conditions being applied to instream activities for cold water AOCs. Unverified waters revert to application of cold water timing restrictions. The vast majority of water courses associated with allocations in the 2006-11 FMP have had the cold water AOC prescription applied for this reason. While not a desirable situation from a forestry operations standpoint, potential cold water fisheries values are protected using this approach. Until more resources can be devoted to verification of fisheries values information, this situation will not likely change.

The 2002 IFA noted the need for additional woodland caribou habitat data on the Nagagami Forest and the 2006-11 FMP stated that opportunities for herd assessment within the vicinity of Nagagami Lake would be investigated. A flight was conducted in 2005 focussing on areas where caribou were known to occur. None were located on the Nagagami Forest but animals were seen on the adjoining Hearst Forest. Efforts continue to acquire funding for collaring. In the interim, the strategy contained in the FMP to protect and perpetuate areas of suitable caribou habitat in the Nagagami Lake area is being implemented. As well, discussions between planning teams on adjoining forests have been initiated regarding a coordinated approach to woodland caribou management. Overall strategies will be impacted by direction resulting from work on a provincial recovery strategy (currently in draft form) for forest-dwelling woodland caribou.

The 2006-11 FMP included a very thorough discussion of requirements and considerations used to determine selection criteria for harvest, renewal and tending. Public concerns were also considered in the FMP - *public concerns such as private camps can influence localized selection of areas for operations. The continued viability of the remote tourism industry on the forest is an important consideration when selecting areas for harvest operations.*

Areas selected for operations were consistent with the selection criteria and the audit team noted that the chosen allocation was very similar by age class to the allowable harvest area (AHA) from modelling. Some age class substitution occurred for younger wood, mainly in the PO3 and SB1 forest units, but this was minimized. FMP maps correctly identified areas selected for operations.

Suitable contingency area was also identified and rationale for possible use was provided. Slightly more than one year of operations was identified as contingency area to allow for substitution of areas in the caribou zone that may not be cut in the first year of the plan and would therefore need to be traded for other areas. It was noted that the contingency area by forest unit did not always reflect the AHA breakdown (e.g. only 8% of SB3 but 42% of SF1 chosen, based on a percentage of the five-year allocation). The FMP text noted that if contingency area is used, the AHA by forest unit would not be exceeded; therefore no recommendation is made herein.

Table FMP-19 and related text summarized the AHA, forecast and planned harvest area and reserve areas. It was noted that only 185 ha of reserves were planned versus 3,100 ha forecast. This large variance was not discussed in the text as required. Also, the text noted that there were 5,100 ha of forecast reserve, which did not match Table FMP-19. Missing information and errors are noted as a problem in the 2006-11 FMP and a recommendation is made in Section 3.3.5 to improve the content of future FMPs.

Access documentation in the 2006-11 FMP was thorough. There was much interest in access demonstrated during the development of the FMP (as discussed in Section 3.3.1), which led to the need for Issue Resolution in two cases.

Section 4.6 of the 2006-11 FMP described the forecast of revenues and expenditures for the term; Table FMP-28 summarized the information. However, the numbers noted in the text were not the same as the table. Again, a recommendation in Section 3.3.5 is given to improve the content of future FMPs. Regardless, because the discrepancy in values was not large, the forecast of revenues and expenditures adequately reflected proposed operations and the selected management alternative.

Section 4.8 of the 2006-11 FMP contained a discussion of compliance and silviculture effectiveness monitoring and was essentially complete. One small exception was not discussing or, at the least, referencing, the osprey exception monitoring plan that is included at the beginning of the plan. This is another example of a minor omission of required FMP text.

A five-year compliance plan was included with the FMP. This document was well written and included all required components, including updates based on the 2005 *Guideline for Forest Industry Compliance Planning*[17].

The main issue found during a review of operational planning was inconsistent and contradictory direction regarding utilization within the 2006-11 FMP and in other forest management documentation. For example:

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[17] MNR. 2005. Guideline for Forest Industry Compliance Planning. Ont. Min. Nat. Res., Queen's Printer for Ontario, Toronto. 17 pp.

- In the 2006-11 FMP (p. 439): "No merchantable trees as defined in the CFSA and if not required for natural disturbance pattern or forest management, will be left standing in harvest areas." However, later in this section the following statement is made: "Where these species [cedar, larch, balsam poplar] exist on the allocated area they will for the most part be left standing." This is a contradiction within the same section.
- The compliance plan for the 2006-11 FMP added non-veneer white birch to the list of non-marketable species noted above and stated for these species "...if they are cut they must be utilized and all dues and fees must be paid." But the 2006-07 AWS stated "These presently non-marketable species will be left standing within cutovers as much as possible. Any incidental felled trees will be left on site." Again, this is a direct contradiction of the plan.

Contradictory direction was also found in the 2001-06 FMP and accompanying AWSs as illustrated below:

- The FMP stated "...all cut trees are brought to the road regardless of species and product" versus the text in the AWSs (up to the 2005-06 schedule) which stated "...non-marketable species will be left standing...incidental cut trees will be left on site."

The main issue with the contradictions is that compliance cannot be correctly gauged. According to the *Forest Operations and Silviculture Manual*[18] and *Scaling Manual*[19]: *Reasons for leaving merchantable trees and/or wood fibre in specific areas within a forest must be described in the approved Forest Management Plan.* Therefore, utilization standards must be clarified in the 2006-11 FMP and this direction must be kept consistent in all other forest management documentation.

Recommendation 11: NFML must clarify utilization standards in the 2006-11 FMP and ensure that this direction is consistent in all forest management documentation.

Related to this issue is the lack of direction in the 2006-11 FMP on residual trees and silviculture prescriptions. Although the FMP noted that *Section 3.6 describes silviculture treatments for forest units containing high concentrations of potentially unutilized species;* no specific information was found. Prior to plan development of the 2006-11 FMP, Northeast Region MNR provided useful direction related to leaving specified amounts of birch or aspen on select sites; the regional information was not used in the plan. In addition to the Northeast Region direction, NFML is reminded that according to the *Scaling Manual: Leaving merchantable trees at the harvest site because of market related issues must not jeopardize the silviculture or habitat objectives of that harvest site.* The *Silvicultural Guide to Managing for Black Spruce, Jack Pine and Aspen on Boreal Forest Ecosites in Ontario* provides further clarity to the subject: *if residual trees have the potential to interfere with the successful establishment and subsequent development of the new stand, then these stems must be treated (e.g. felled, girdled, treated with herbicide).* Therefore, for stands not covered by the Northeast Region MNR direction, NFML must have a plan to treat all residual stems not otherwise needed for wildlife (e.g. NDPEG[20]) or silviculture (e.g. CLAAG[21], seed trees) objectives. In addressing Recommendation 12, NFML should consider direction from MNR Northeast Region for select hardwood and mixedwood stands.

Recommendation 12: NFML must detail in the 2011 FMP a plan to treat all residual stems not otherwise needed for wildlife or silviculture objectives to ensure that the regeneration of new stands is not jeopardized.

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[18] MNR. 1995. Forest Operations and Silviculture Manual. Queen's Printer for Canada. 34 pp. + Appendices.

[19] MNR. 2000. Scaling Manual. Queen's Printer for Canada. 79 pp. + Appendices.

[20] MNR. 2001. Forest Management Guide for Natural Disturbance Pattern Emulation, Version 3.1. Ont. Min. Nat. Res., Queen's Printer for Ontario, Toronto. 40 pp.

[21] Careful logging around advance growth.

The FMPM requires that the auditees address the recommendations arising from IFAs in the FMP. An audit action plan update, dated January 23, 2006, was provided in Section 6 of the Supplementary Documentation to the 2006-11 FMP. The status of 26 of the 63 proposed actions associated with the 33 audit recommendations was given (e.g. completed, ongoing). The status for the balance, most with target dates from 2004, was not given nor was comment provided. The Audit Action Plan Interim Status Report, prepared in March 2005, provided more complete information on the status of the various action items than did the summary in the Supplementary Documentation, and should have been used as the source of the most current information for the FMP.

Recommendation 13: NFML and MNR must ensure that information contained in the summary of audits in the Supplementary Documentation to the FMP is current and complete.

3.3.8 Plan Review, Approval

The final plan was submitted on January 12, 2006 and approved by MNR on January 27, 2006. All of the appropriate seals and approvals were included in the final FMP, and the pages prior to the Regional Director's signature page included exceptions to recommendations in forest management guides, and a list of clearcuts greater than 260 ha. However, the plan did not declare the aspen shelterwood exception in the preface, as discussed in Section 3.3.9. The timing of the draft and final plan submission and review process was appropriate.

In total 1,549 alterations were requested to the draft FMP, 542 of which were required. The audit team felt that this was a surprisingly large number; however, neither MNR nor the plan author appeared to be concerned by this. In addition, none of the plan reviewers interviewed had any concerns regarding how the required alterations were addressed, and one reviewer noted that most comments were editorial. In fact, many of the comments related to the documentation of road use management strategies, which the plan author and the reviewers agreed was a result of an attempt to make these documents "squeaky clean."

Of 15 reviewers, three were planning team members and three were advisors. However, most comments were provided by District staff (e.g. technicians), who are involved in the management of the Nagagami Forest. It is possible that if the District technicians had been more directly involved in the planning process, there might have been fewer alterations; however, as noted above, it appears that the large number of alterations was not problematic.

3.3.9 Plan Amendments

The frequency and nature of amendments appear reasonable and adds to the other sources of evidence to show that plans were prepared using due diligence, best available information and experience from prior plans. The audit team expresses some concern with amendments for roads (see Suggestion 8 in Section 3.3.6). The number of amendments is shown by category in Table 2.

Table 2. Frequency and Category of Plan Amendments.

Plan Term	Type of Amendment		
	Administrative	Minor	Major
2001-2006	11	0	0
2006-2011 (Year One only)	3	0	0

One amendment was a response to a recommendation made in the 2002 IFA that required the company to provide rationale in the FMP for exceptions to the Silvicultural Guides, specifically when protecting advanced growth in mixedwoods through careful harvesting (referred to in the current boreal mixedwood guide[22] as two-stage harvesting) on site types 3a and 6b. Although it could be argued that these practices were not exceptions to the Guides in place at the time of the audit, NFML complied with the recommendation and changed its practices by increasing site preparation activity on these site types to reduce balsam fir content in the regenerating forest.

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[22] OMNR. 2003. Silviculture Guide to Managing Spruce, Fir, Birch, and Aspen Mixedwoods in Ontario's Boreal Forest. Version 1.0. Ont. Min. Nat. Res., Queen's Printer for Ontario. 382 pp.

The audit team encountered a similar circumstance in the field where a modified harvest (single pass strip cut) was used to protect aesthetic values in a poplar stand (Block 565). Although the scale of this practice is not a significant concern, it is an exception to the Silvicultural Guides and should be addressed as such in the plan.

Recommendation 14: NFML must amend the 2006-11 FMP to include the modified harvest exception to the Silvicultural Guides implemented in Block 565.

3.3.10 Contingency Plans

There were no contingency plans prepared during the term of the audit.

3.3.11 Annual Work Schedules

Four of the AWSs reviewed during the audit were based on the 2001-06 FMP. The final AWS was developed based on the 2006-11 FMP. In almost all aspects the AWSs were consistent with direction provided in the applicable FMP and revisions were completed and processed as required. As noted in Section 3.3.7, there were contradictions in utilization direction in the FMPs versus the AWSs; a recommendation was made in that section to clarify utilization standards.

The AWSs also incorporated all necessary components required through phase-in of the 2004 FMPM in the 2005-06 and subsequent AWS, including the burn plan, roads and aggregate pit information. Annual compliance plans were also completed as required. One small exception noted was the omission of the word 'access' on the title page of the newer AWSs. No recommendation is made here but NFML is urged to update future AWS title pages accordingly.

One other finding deserving mention was the inclusion of excess operations in some AWSs. For example, mechanical site preparation and planting areas were grossly over-estimated in a few AWSs to allow for *reduction of entire blocks based on field assessments*. Figure 3 shows the annual planned versus actual planting program for the 2001-06 FMP term – note the large spike in planned tree planting area in 2003-04 against the actual accomplished by year, which was quite stable. In addition, the 2006-07 AWS included 48% of the 2006-11 FMP allocation to *allow flexibility necessary...to enable spring operations in the early part of 2007-08 AWS to occur*. Although the FMPM requirement to provide an explanation for planned operations *not in agreement with the average annual rate forecast in the FMP* is met by the explanations given, the audit team believes that of equal or greater importance is that AWSs should be a reasonable reflection of actual operations planned for the year to allow public notice for those that may be affected. In addition, including excessive operations in a single AWS may be viewed by the public as misrepresentation or interpreted as poor planning.

Suggestion 9: NFML should explain in the AWS text in a way that informs the public the rationale for requiring additional harvest area beyond the average annual area of harvest.

The audit team also noted that operations of several roads and harvest blocks were planned in successive AWSs. This occurred for up to three years for some planned operations. For example, the Breckenridge South secondary road was planned for construction in the 2003-04, 2004-05, and 2005-06 AWSs. Repetition was due to three main factors:

- A bump-up of the 2001-06 FMP: all blocks larger than 260 ha were modified to be smaller than 260 ha. This caused return harvest to many areas once the bump-up had been denied.
- Two-stage harvesting was common on the Forest during the early years of the audit term. This resulted in return harvest on many blocks and was exacerbated by the returns scheduled due to the bump-up.
- The salvage of a wildfire area in 2003 affected planned operations during that year.

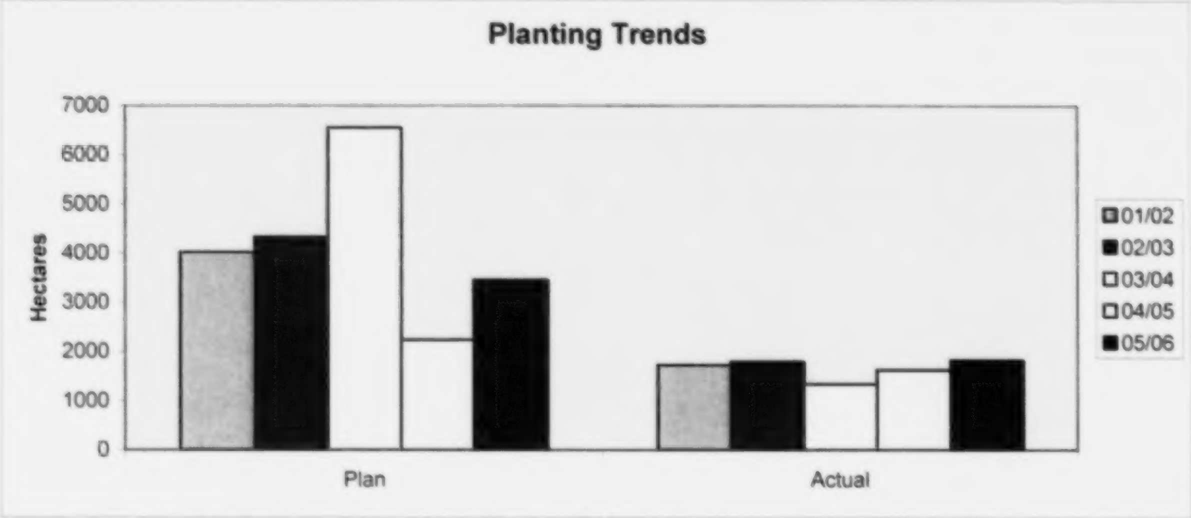

Figure 3. Annual Planned versus Actual Planting Area for 2001-2006.

The audit team is satisfied that although some excess operations were planned in AWSs during the term as discussed above, the repetitive planning of operations was unavoidable and no recommendation is made.

3.4 Plan Implementation

3.4.1 Areas of Concern

Implementation of prescriptions on a sample of AOCs was viewed in the field. All prescriptions, with the exception of the AOC for MAFAs, as previously discussed in Section 3.3.7, provided appropriate protection to the identified value and were applied correctly. The most common prescriptions were slope-based reserves designed to protect fisheries and water quality values. Buffer widths were appropriate to slope conditions observed in the field. No evidence of trespass into AOCs was noted, which was consistent with overall compliance trends reported by both NFML and MNR inspectors.

Figure 4 illustrates MAFAs observed in the field. The figure on the left is a high quality MAFA (not associated with a field stop) with evidence of recent usage. The figure on the right is typical of MAFAs viewed during the audit. Virtually no suitable vegetation was evident at several similar examples viewed. This resulted, in part, from an error associated with erroneous information being recorded on the wildlife values map and the information being carried forward and used during planning. Recommendations to address this situation were given in Section 3.3.7.

As noted previously in Section 3.3.2, the AOC prescription for tourism values (and the District Tourism Strategy) includes several mechanisms to prevent road-based access to remote tourism lakes, including a 400 m no roads zone measured from the shoreline, as well as signs erected under the authority of the *Public Lands Act* (PLA). It is in this context and the fact that AOC prescriptions are developed and implemented through forest management planning, that the following discussion is provided.

Several remote tourism operators expressed concern to the audit team regarding the creation and use of trails by MNR's Conservation Officers for monitoring and enforcement of activities on remote tourism lakes. The tourism operators were concerned that these trails would be used by members of the public, although they are not used by the public at this time.

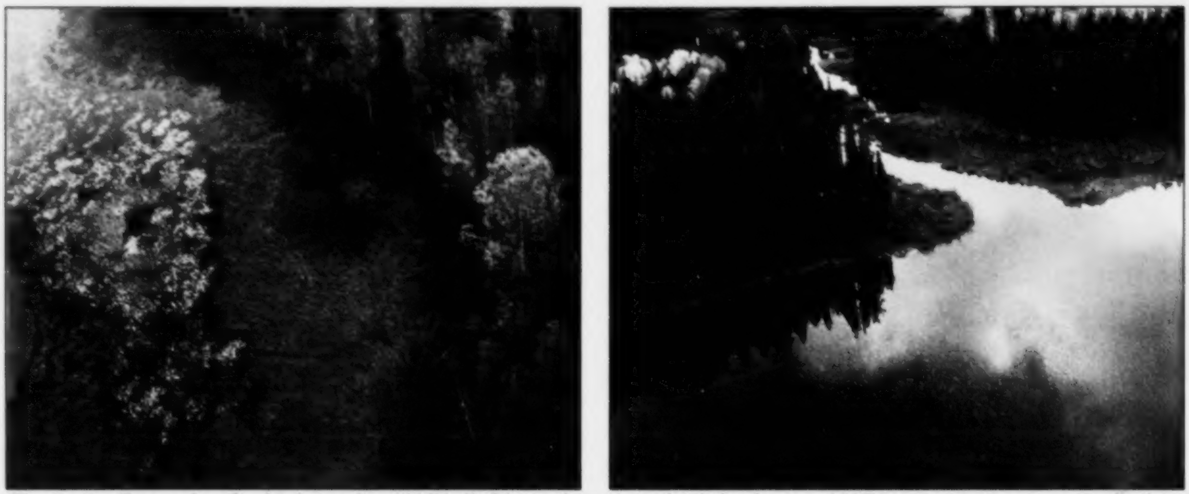

Figure 4. Example of a high quality MAFA (left), and an area (right) where a MAFA prescription was applied.

MNR explained that only one trail was constructed by Conservation Officers into a remote lake and that the other trails used by Conservation Officers are prospecting or trapper trails, or existing illegally constructed trails. MNR indicated that the public tends to obey the PLA signs on this Forest, and all of the trails are beyond PLA signs. MNR also stated that it is difficult and costly to obtain an aircraft to conduct inspections.

The audit team does not question the right of Conservation Officers to access designated remote tourism lakes for enforcement purposes; however, the use of roads and trails to access designated remote tourism lakes compromises the integrity of the associated AOC prescription by maintaining a drivable route within an area where no roads are permitted. In addition, it sends a mixed message to remote tourism operators regarding MNR's commitment to protecting remoteness.

3.4.2 Harvest

The audit team viewed a sample of harvest activities completed during each year of the audit term – the first four years were directed by the 2001-06 FMP, the last year by the 2006-11 FMP. The sample included operations by each of the main operators during the term on a variety of site types through all seasons. Cut-to-length and conventional feller buncher systems were almost exclusively utilized by contractors to harvest wood. Wood was generally processed at roadside but some material was also cut to product length at the stump.

Harvest areas viewed were approved in the applicable FMPs and AWSs and were consistent with operations prescriptions and information provided in ARs. Work also followed the specifications of amendments and revisions that occurred during the term. There were exceptions: some trespasses occurred (discussed later in this section); and a few silviculture treatments occurred where not prescribed. As a result, the audit team developed the following recommendation.

Recommendation 15: NFML must ensure that Area of Concern and silviculture prescriptions are applied according to the forest management plan and/or annual work schedule.

No salvage was planned in FMPs but salvage harvesting of a wildfire occurred in 2003 and 2004. The audit team noted very good utilization in the salvage area and commends NFML for timely completion of this work.

Most harvest prescriptions audited in the field were appropriate and effective and were consistent with prescriptions. The exception was retention of excessive birch on a few sites, which does not follow direction in the *Scaling Manual* or the *Silvicultural Guide*. For example, Block 928 was a PO3 area prescribed for natural regeneration but was noted as having much residual birch following harvest (Figure 5). Natural regeneration will be hampered in portions of the block where excessive residual birch exists. Clear utilization direction in forest management documentation may have averted these occurrences and a recommendation is made in Section 3.3.7 to clarify utilization direction.

As discussed in Section 3.3.11, multiple block entries were very common during the term. This was mainly a result of two-stage harvesting that occurred early in the audit term and the bump-up of the 2001-06 FMP that resulted in the reconfiguration of larger blocks into blocks less than 260 ha for harvest in the first few years of the plan. Following denial of the bump-up request, for those reconfigured blocks that were harvested, the remaining portions were then available for harvesting. Silviculture operations were also affected by the multiple harvest entries.

Regardless, the audit team was surprised at the apparent willingness of contractors to complete multiple entries of the same block. Although it was noted that operations were generally well done in blocks that had been operated more than once, the audit team believes that the single pass harvesting system now promoted by NFML will reduce the chance for compliance issues and is otherwise a more efficient operating structure.

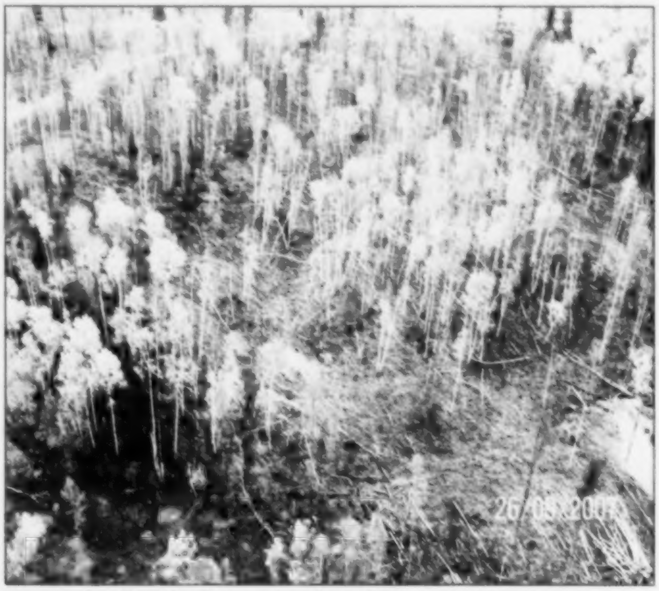

Figure 5. Residual trees in Block 928.

The audit team found that harvest area boundaries were properly laid out. Most boundaries were complied with during operations; however, it was noted that there were some compliance issues related to trespass during the audit term. One trespass, into a neighbouring forest, was large and resulted in a significant fine and restoration order.

A new boundary layout protocol was implemented on October 1, 2005 for use by all harvest contractors. Following this protocol should minimize boundary layout compliance issues in the future.

Although fine-textured and organic soils dominate the Forest, very little site disturbance was viewed during the field audit. Where site disturbance was noted it was localized (Figure 6). However, reduced regeneration including the root suckering of aspen was noted on some sites where soils were disturbed/compacted. Review of older FTG sites indicated that road systems persist on the landscape, due mainly to compaction of fine-textured soils.

Suggestion 10: NFML should implement methods to identify soils susceptible to compaction and minimize soil compaction on all sites.

Utilization was an issue during the last audit and there were some compliance issues related to utilization during the current audit term. Despite this, the audit team noted a significant improvement in utilization when compared to the findings of the previous audit. Utilization was good at most audit stops, particularly for the main conifer species. Slight deviations included roadside accumulation of hardwood (including scaled poplar veneer) and occasional conifer sticks at some sites (Figure 7). Cut merchantable birch and cedar trees were also viewed in some cutovers as were infrequent high stumps.

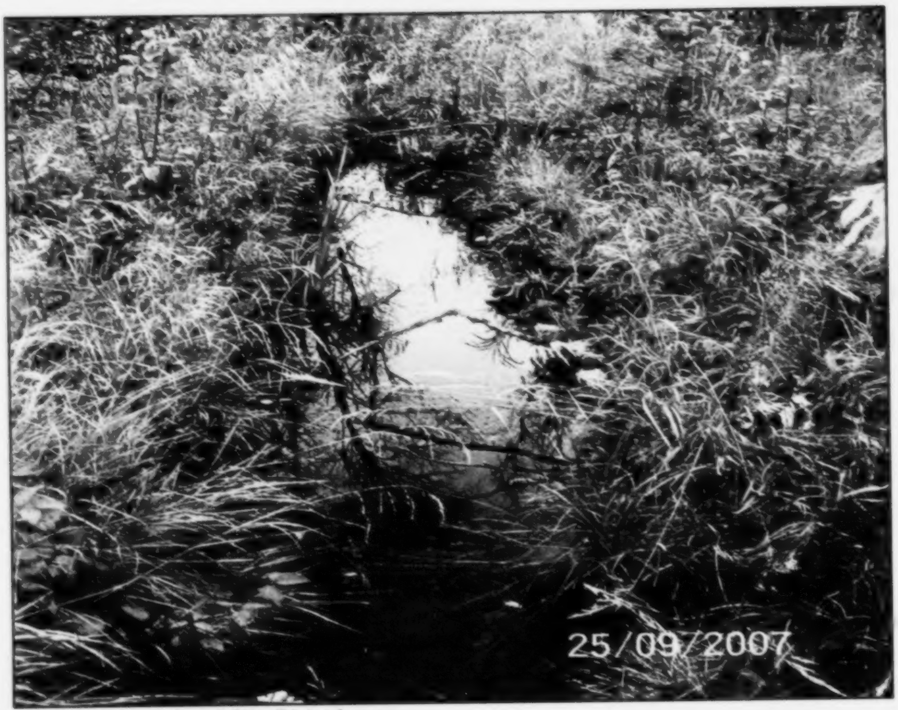

Figure 6. Localized Site Disturbance.

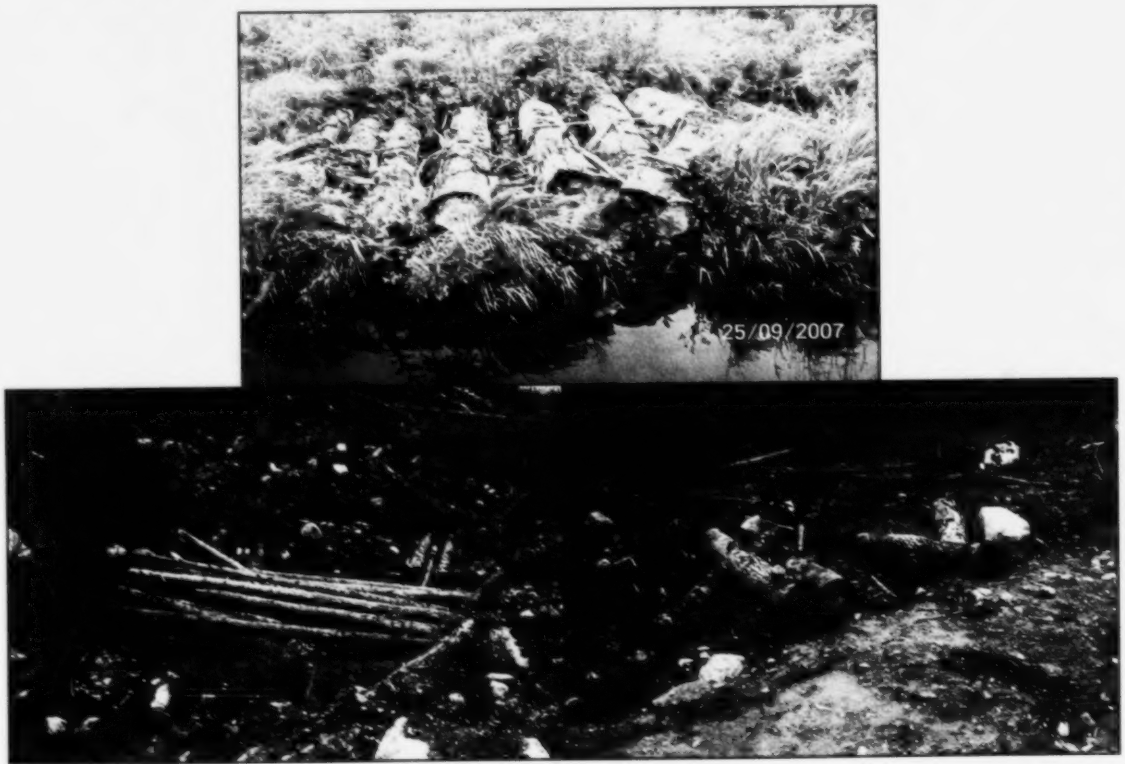

Figure 7. Examples of unhauled poplar.

As discussed, the rules for utilizing cut unmarketable incidental trees were not consistent or clear in the forest management documents used during the audit term. This may have promoted the allowance for leaving cut merchantable timber in cutovers. A recommendation is made in Section 3.3.7 to clarify utilization standards. The audit team believes that this will improve utilization in the future.

Slash management was also raised as an issue in the last audit. There was obvious improvement in slash management during the 2002-07 period. An older site viewed for tending during this audit had extensive slash covering significant productive land and gave credence to the previous audit finding. During this audit, slash was piled at all sites viewed and pile burning was generally effective – at some sites the pile removal was almost perfect (Figure 8). There were occasional piles viewed but they were the exception. The audit team noted that the use of cut-to-length systems at several sites also reduced roadside slash by leaving unmerchantable material at the stump.

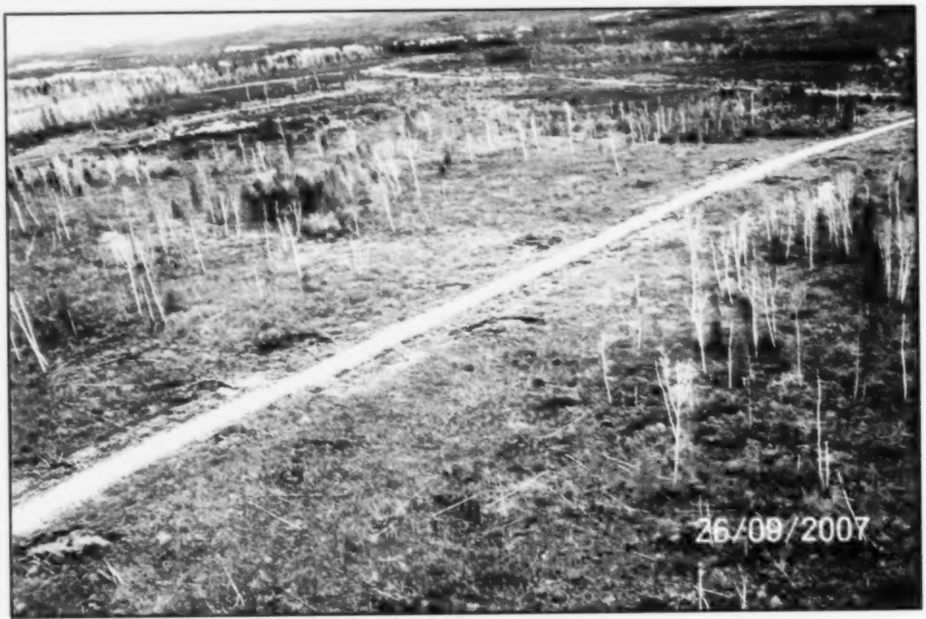

Figure 8. Good reduction of roadside slash.

3.4.3 Renewal

The forest renewal program was well executed and benefits from the considerable field experience of NFML's staff and contractors. The use of white spruce in mixtures with other species is effective at maintaining biodiversity values (Figure 9). Many areas left for natural regeneration of hardwoods support thrifty second growth forests of these species.

The amount of area left for natural regeneration and areas assisted with planting followed plan levels and were appropriate for the site conditions. There was an increase in site preparation in response to the 2002 IFA recommendations to reduce balsam fir regeneration. This is a reasonable practice in the boreal forest as part of an integrated pest management program (although not stated as such in the management plan). Most of the sites were treated by winter-blading. This method can create site damage but the supervision methods and the contractors' skill in applying this treatment produced excellent results with no site damage being observed by the audit team.

NFML has used chemical site preparation on many sites with good results; however, this technique may not reduce balsam fir. NFML also used light drags. Other options, such as power trenching, intermittent patch or prescribed burning, are worth investigating.

Suggestion 11: NFML should expand its site preparation treatment regime to include additional methods to complement the existing program of winter blading.

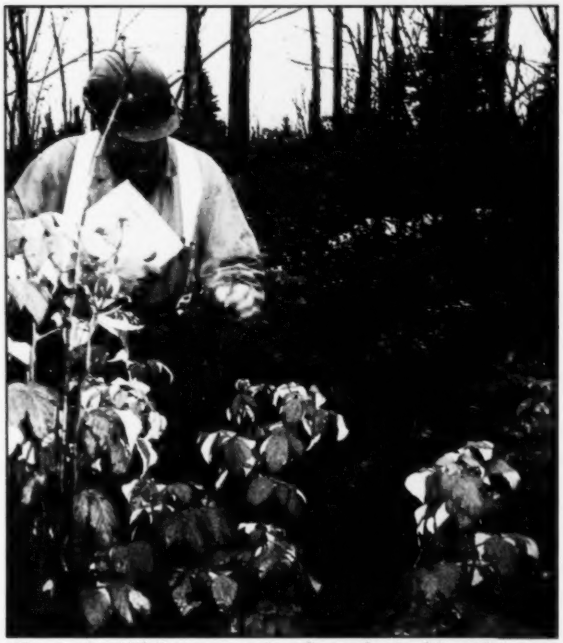

Figure 9. White spruce is often planted in mixtures with other conifers.

The audit team noted the success of past prescribed burn treatments on the Nagagami Forest (Figure 10). The auditees expressed a strong interest in using prescribed burns on terrain and site conditions that are hard to treat with conventional methods.

Unfortunately, a small minority of prescribed burns in Ontario in the last 30 years resulted in loss of property and loss of life. MNR also has a policy of full cost recovery for conducting prescribed burns making them often prohibitively expensive for the SFL holder. In addition, conducting a successful prescribed burn requires not only extensive planning but very specific site and weather conditions, complicating factors not associated with other types of site preparation. For these reasons, prescribed burns are rarely used to assist forest renewal efforts in Ontario. However, prescribed burns can produce exceptional results and suppression methods and fire behaviour forecasting tools continue to improve. Given the potential benefits, prescribed burns are worth revisiting as a legitimate treatment method.

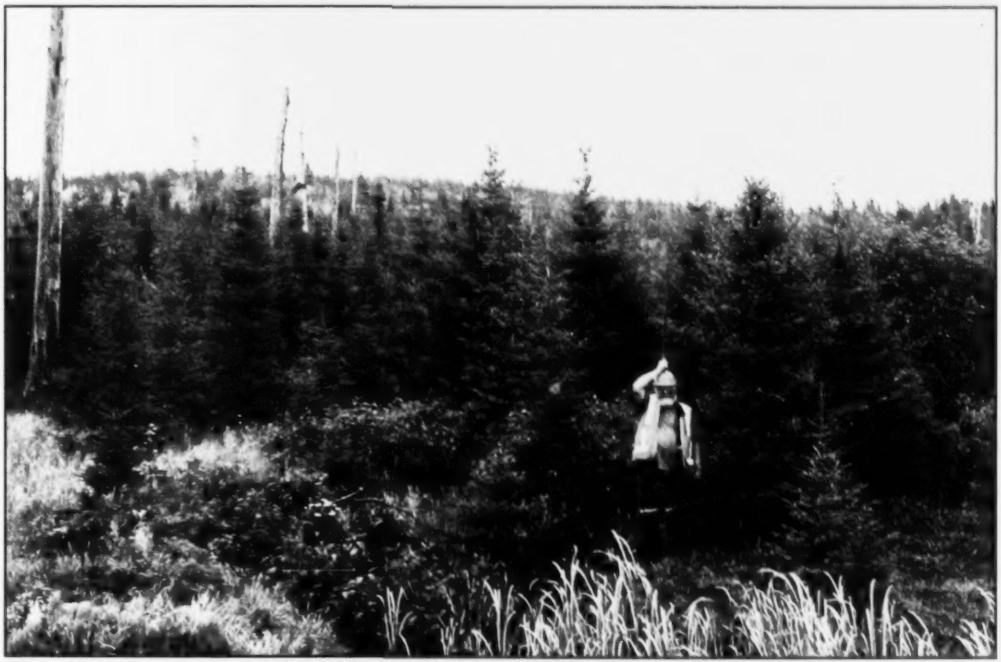

Figure 10. Past prescribed burn treatments have supported well stocked and fast growing regeneration of desired tree species.

Suggestion 12: MNR should conduct an evaluation of the costs, benefits and shared liabilities of reinstituting a prescribed burning program on the Nagagami Forest in advance of the approval of the next forest management plan.

3.4.4 Tending and Protection

The highly competitive sites require tending to maintain conifer levels on the Forest. The tending program relies upon the aerial application of herbicides. These treatments were observed to be very effective and well-controlled with a few exceptions where some drift and banding was noted in the field.

3.4.5 Renewal Support

Renewal support activities on the Nagagami Forest were found to be consistent with the FMP, including the AWS and the information reported within the ARs. Activities included seed collection for seeding and nursery stock production, and tree planting. There are two seed orchards (black spruce and jack pine) that are associated with the Nagagami Forest at Island Lake, both of which are managed by the Northeast Seed Management Inc. (NESMA) cooperative. The orchards produce enough improved seed to meet the forecasted demands of NFML. NFML is an active member of the NESMA and supports it financially.

Over the audit period, no issues in renewal support were reported by MNR or NFML nor did the audit team observe any issues regarding renewal support during the audit.

3.4.6 Access

Access maintenance, construction and abandonment were viewed at several locations. New road construction and old road abandonment occurred as planned. One issue noted was pooling of water adjacent to some operational roads (Figure 11); this was also noted as a concern in the 2002 IFA. The use of cross drainage culverts was not apparent on any operational roads encountered during the audit. While there were examples of roads that had been ditched across following operations to allow flow of water, there were other areas where this work was not done and water pooled beyond the ditch. One area ditched still had extensive water pooling. Compliance reports for the audit term also note pooling at several sites. Obviously, the system currently being used is not sufficient to minimize pooling and the audit team makes the following recommendation.

Recommendation 16: NFML must ensure that appropriate measures are used to minimize pooling of water next to roads.

A number of older stream culverts were replaced during the audit term along some of the main access roads on the Forest. The work viewed was excellent and showcased evident improvement of water crossing installations since the last IFA (Figure 12). However, one sub-standard portable bridge installation was viewed in the field. There were many issues with this bridge including: new sill material placed in the stream bed, missing curb on one side, openings in deck, and accumulation of dirt on deck (Figure 13). Although viewed as an isolated incident, the audit team was concerned with the number of issues with this structure. NFML noted that the structure was scheduled for repair during the 2007-08 term and following the field audit, sent an inspection report to the audit team identifying successful completion of remedial work on this bridge. As a result, the audit team has not made a recommendation, however a suggestion is offered.

Suggestion 13: NFML should evaluate and correct the root cause that led to the deficiencies associated with installation of the portable bridge in Block 802.

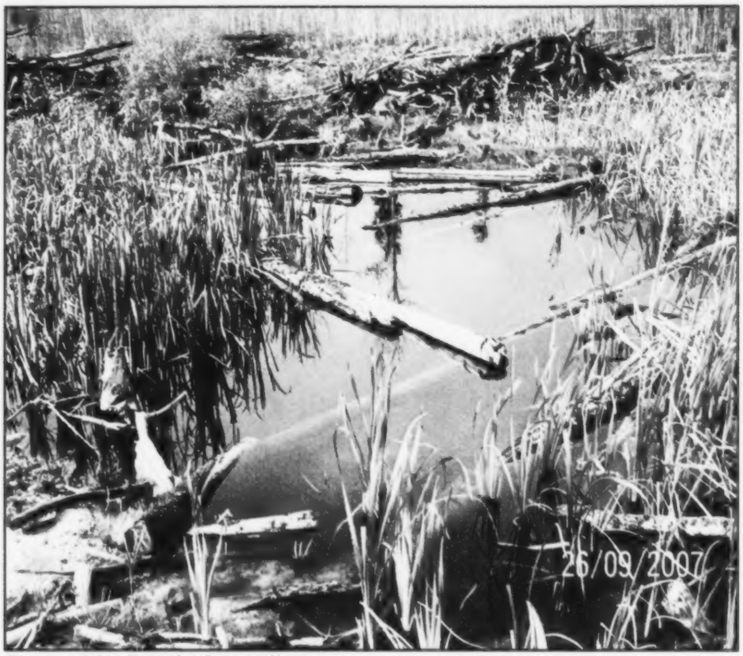

Figure 11. Roadside pooling.

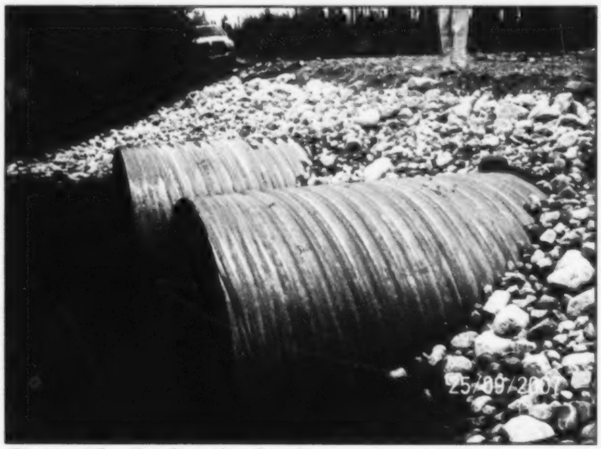

Figure 12. Replaced culverts.

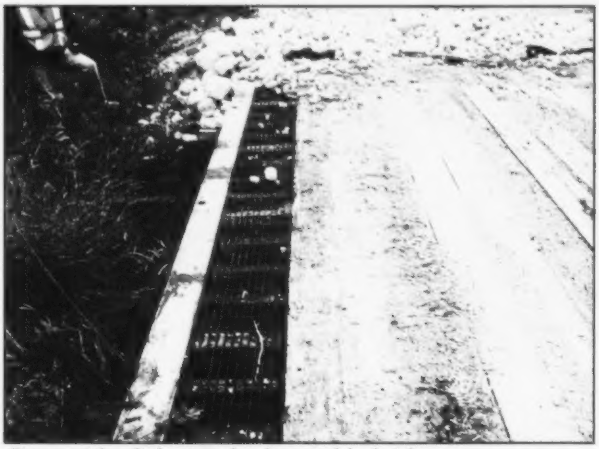

Figure 13. Sub-standard portable bridge installation in Block 802.

A sample of roads and crossings constructed and maintained with provincial funding was viewed. This included some of the replaced culverts noted above. Other prominent work was addition of riprap at select crossings, ditching and brushing along portions of primary road, and grading of the roads. The road construction and maintenance funds were appropriately directed during the term.

Several Category 14 and some Category 9 aggregate pits were viewed by the audit team. No concerns were noted. NFML noted that pit permits were now almost exclusively held by the harvest contractors. This is appropriate for the management system in place.

3.5 Systems Support

3.5.1 Human Resources

A comprehensive training program, through ACI, is conducted on the Nagagami Forest. Examples of training received by staff, contractors and shareholders included standard operating procedures, aggregate resources requirements, snag requirements, and site protection. A separate contractors' review of requirements covering topics such as EMS, fire, safety, harvesting, and stream crossings was also conducted and documented prior to start-up. Benefits of the training were evident at the field sites viewed during the audit. Comprehensive records of training were maintained.

Best Practice 1: The comprehensive training delivered through Abitibi-Consolidated for staff, contractors and shareholders on the Nagagami Forest.

Training records for MNR staff were also viewed and training was found to be current and appropriate to the individual job duties. For example, training records for the Management Forester indicated that required forest management planning training modules were completed.

3.5.2 Documentation and Quality Control

NFML has most of its forest management program plans and records stored in electronic format. The data was used as the principal source of information for the audit field inspection and was found to be accurate in the vast majority of cases.

The GIS master files and programs reside in the ACI office in Iroquois Falls. This is efficient but can lead to some problems in controlling the quality of data. For example, there was one coding error noted on FMP maps – the portion of North Lascelles Road completed during the 2001-06 term was coded as operational rather than primary. Based on a cursory review of the FMP maps, obvious coding errors of other significant features in the inventory suggests there is room for improvement in map creation and review.

Suggestion 14: NFML should ensure that all map products contain correctly coded features.

3.6 Monitoring

3.6.1 General Monitoring

Compliance

MNR met most compliance planning requirements during the audit term. One exception was not developing a new strategic compliance plan for the District for use upon expiration of the 1994-99 plan. In 2004, the Province removed the requirement for districts to complete strategic compliance plans; thus, a recommendation is not made herein.

MNR developed comprehensive annual compliance plans for each year of the audit term. The annual plans provided a focus for compliance for each of the forests in Wawa District including a summary of actual compliance inspections planned to occur by forest by month. On average, 36 compliance inspections per year were planned for the Nagagami Forest for all but one year during the audit term (28 in 2003-04).

NFML developed strategic compliance plans for the 2001-06 and 2006-11 FMPs as well as annual compliance plans for each year in the audit term. These documents were well written and met all requirements of the *Guideline for Forest Industry Compliance Planning*. One minor finding related to NFML compliance planning was a discrepancy between actual practice and wording in the 2006-11 FMP Compliance Plan. According to wording on pages 21-22 of the 2006-11 Compliance Plan, all final compliance inspections are completed by NFML; however, on page 27 of the Compliance Plan, the operators were noted as being responsible for completing all final inspections, with NFML completing a sample of final inspections. According to NFML staff, NFML uses information from the company final inspection reports (based on NFML's EMS) to complete the final compliance inspection in the Forest Operations Information Program (FOIP). In all cases NFML staff field verifies the block conditions described in the contractors EMS final inspection form and completes the final FOIP report. This process deviates slightly and is otherwise not clear with wording in the Compliance Plan.

Suggestion 15: NFML should clarify compliance roles in compliance planning documents.

The level of compliance inspections completed by MNR was appropriate for the first three years of the audit term. In the final two years MNR significantly under-achieved versus planned. According to MNR, the main reason for underachievement was lack of a dedicated area technician; however, the audit team is not convinced that this is accurate.

In the 2003-04 Annual Compliance Plan, MNR noted that there were only two qualified area technicians (i.e. certified Forest Operations Compliance Inspectors capable of conducting and reporting on forest operations) available in the prior year to inspect the four district forests administered through the Wawa office. It was suggested this was the main factor for underachievement of compliance inspections. Nonetheless, 34 of 36 planned inspections were completed on the Nagagami Forest in 2002-03 (17 reports per compliance inspector-year). In the 2004-05 Annual Compliance Plan it was noted that, for the previous year, there were three compliance inspectors for the four district forests and that a full compliment of staff would have completed more inspections; however, records indicate 26 of 28 planned inspections of the Nagagami Forest occurred in 2003-04 (8.7 reports per inspector-year). Therefore, three compliance inspectors completed fewer inspections on the Nagagami Forest than the two compliance inspectors in the previous year. In 2004-05, with a compliment of three compliance inspectors, MNR completed six more inspections than planned on the Forest (42 versus 36 – 14 reports per compliance inspector-year). For the remainder of the audit term there were two compliance inspectors and one trainee (to December 2006). MNR completed only four inspections in 2005-06 and three in 2006-07 (about two reports per compliance inspector-year); 36 were planned for each of these years.

Reduced MNR presence on the Forest throughout the audit term (except in 2004-05) concerns the audit team. Most significant is the minimal number of inspections completed in 2005-06 and 2006-07. This level of inspection was not adequate for the operations completed during this period. The audit team believes that the significant under-achievement of compliance inspections indicates a lack of commitment by MNR. Hence, a recommendation is made in Section 3.1 (Commitment) for MNR to meet its compliance commitments on the Nagagami Forest.

The audit team noted that MNR does not verify cut block boundary control through review of supplemental aerial photography. This is standard practice for MNR in other districts and is a cost-effective tool in checking boundary compliance. Newer photography may also be useful to check for residual tree retention, unhauled roadside wood piles, slash piling and burning and other compliance matters.

Suggestion 16: MNR should annually review supplemental aerial photography as one component of a compliance monitoring plan.

AWSs indicated far more inspections to be completed by NFML than were actually completed. This is mainly due to identifying more than one year of operations in the AWSs to allow flexibility (discussed in Section 3.3.11). The audit team determined that the number of compliance inspections completed by NFML during the audit term was appropriate and that a full compliment of operations was checked. The audit team also noticed marked improvement in content of NFML and MNR inspection reports through time, and commends this effort.

Inspection reports were generally submitted according to the specified timelines and the few deviations noted do not warrant a recommendation. All but approximately 40 ha was licensed to and operated under NFML or the predecessor Donohue Forest Products during the audit term. Table 3 summarizes MNR and NFML compliance inspections and non-compliances by year, based on annual reporting (2006-07 obtained through FOIP). There was significant variance in compliance recorded during the term - NFML recorded 14 non-compliances in 603 inspections while MNR found 22 non-compliances during 109 inspections.

Table 3. Summary of Compliance Reporting 2002-2007.

	NFML		**MNR**	
	Reports	**Non-compliances**	**Reports**	**Non-compliances**
2002-03	193	4	34	2
2003-04	91	5	26	10
2004-05	171	3	42	9
2005-06	87	1	4	1
2006-07	61	1	3	0
Total	603	14	109	22

A portion of this discrepancy is due to MNR reporting on all non-compliances already noted by NFML in the first three years of the audit term (i.e. double counting). For example, in 2003-2004, five of the ten non-compliances recorded by MNR were those already identified by NFML. Oddly, MNR recorded only two non-compliances in 2002-03 versus four by NFML. This suggests an issue with record-keeping and/or the compliance recording program used early in the term. In 2004, the electronic FOIP reporting system was initiated. This streamlined the compliance reporting process so that for each operation reported on, a single report is followed by MNR and NFML; thus reducing, among other things, dual reporting of non-compliances and record-keeping issues.

Another reason for the discrepancy in compliance during the term was the minimal number of inspections completed by MNR in some years. For example, in 2005-06 one non-compliance was recorded by MNR compared to only four inspections completed.

There were some years where MNR found significantly more non-compliances than NFML. For example, in 2004-05 MNR reported nine non-compliances versus only three by NFML. In addition, although joint inspections were completed during the audit term (partially as a means to ensure consistency between the groups), a difference in compliance inspection interpretation between MNR and NFML was identified at one field stop during the audit. NFML determined that the high stumps left at the site were necessitated by the frequent boulders encountered whereas MNR noted that the high stumps were excessive; although this block was cut several years ago, the opposing positions remains. It is imperative that the reasons for these differences be understood and resolved.

Recommendation 17: NFML and MNR must develop a common understanding and interpretation of compliance standards used during compliance inspections.

The audit team noted that non-compliance generally decreased during the term. This was partially due to fewer compliance inspections conducted in the most recent years but was also due to staff and contractors following extensive procedures developed for operations and completing the accompanying training. Certification of all MNR, NFML and contractor FOIP inspectors also increased awareness of compliance on the Forest.

Another noteworthy compliance initiative, spearheaded by MNR and fully supported by NFML during the audit term, was the contracting of a provincial compliance specialist to conduct a compliance review of the Forest in 2005. This action was taken in response to a 2002 IFA recommendation that compliance monitoring and verification be improved. The KBM audit team noted that NFML and MNR completed and implemented an action plan for all of the recommendations and suggestions provided in the compliance report. This extra effort to improve compliance on the Forest is commendable.

Some of the non-compliances that occurred during the term led to significant fines and restoration orders. The actions taken to remedy issues were appropriate. It is anticipated that the increased awareness of compliance demonstrated by NFML, MNR and the contractors will reduce similar occurrences in the future.

Frequent site inspections were made following the harvest to ensure that the renewal prescriptions matched the site conditions and that the prescriptions were effective at meeting renewal targets. Forest Operations Prescriptions (FOP) were updated through AWS revisions.

Renewal

The formal means of reporting silvicultural effectiveness are the FTG surveys. NFML followed its action plan, resulting from the 2002 IFA, to improve FTG survey frequency and reliability by trying several new survey methods. One approach used ground survey methods featuring fixed area plots along transects. A second method relied upon ground-based ocular estimates from limited transects through the survey area. The third method used large scale aerial photography (LSP) from a helicopter platform to collect stereo paired images on which fixed area plots were interpreted for species composition, density counts and height measurements using parallax bars (Figure 14).

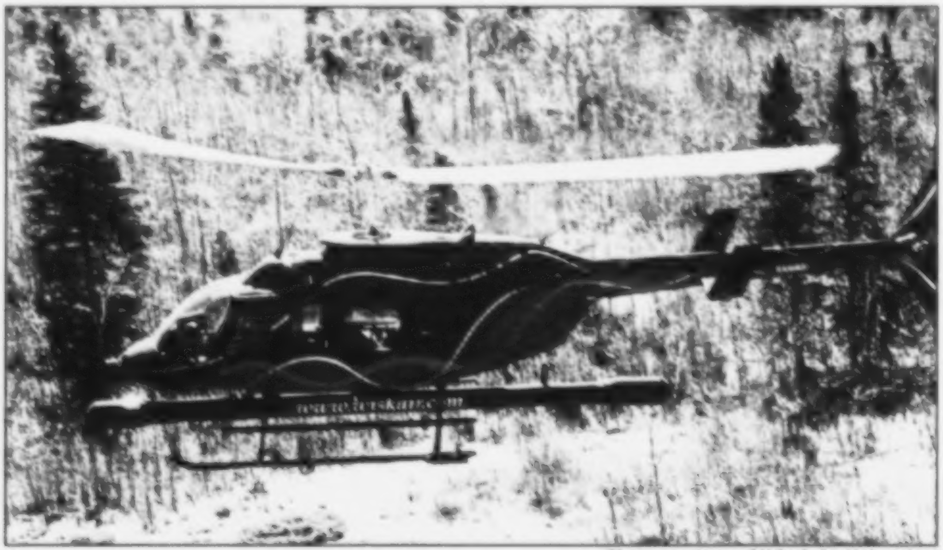

Photo courtesy of Whisk Air Helicopters.

Figure 14. Helicopter with fixed boom camera mounted below the aircraft.

The auditors did not observe significant variances between observed and reported conditions within the ground surveyed stands. Although this survey method is most reliable, it is also the most expensive. For this reason NFML implemented alternative methods such as LSP sampling.

The field audit revealed significant variances in observed versus reported conditions in ocular and LSP FTG results. Ocular methods are, by nature, variable but the LSP methods should provide reliable, objective unbiased results. The images, plot data and sample intensity were examined by the auditors. The images were high quality as was the plot data. However the sample intensity was low. Many stands had fewer than 10 photo pairs and some plots fell on stand boundaries. This low sample intensity appears to be the root cause of the variances noted by the auditors.

For example, one stand viewed by the audit team that was declared FTG poplar was actually undersized spruce (Figure 15). In this instance the audit team noted a very small patch of poplar adjacent to the stand which was the likely source of the FTG call (i.e. the single photo pair for this stand was incorrectly positioned). In addition, the stratification of the new forest was based on the pre-harvest FRI stand boundaries. This system contributed to the variances noted in the field by the auditors.

Figure 15. An area incorrectly declared Free-to-Grow poplar.

The auditors also reviewed the Year 10 AR. The report lacked sufficient detail to gauge how well the Forest was renewing and how effective the treatments were at meeting plan objectives.

These findings combined with the backlog of forest condition reporting problems described elsewhere in this audit report and those noted in previous audits could be of great concern and might raise questions of forest sustainability. However, it should be emphasized that the informal methods of evaluating effectiveness are in place and these are leading to the right kind of interventions (e.g. tending).

In addition, the observations in the field by the audit team found that the practices on the ground were well managed, matched site conditions and will likely lead to the development of a desirable future forest condition. What is missing is the objective evidence of silviculture effectiveness being collected and reported in a convincing and concise manner that satisfies the needs of MNR and the public interest.

The audit sample of free growing sites found that the Forest is regenerating back to a diverse and healthy forest similar in many aspects to the current forest condition. However, there are problems with forest regeneration data collection and reporting. Some of these problems are unique to this forest and others are more systemic and generic. If these problems go unresolved it will become difficult to determine in an objective manner whether or not the plan objectives are being met and whether or not the silviculture program is as effective as it might be.

There are three issues to be resolved. The first is how to make the best use of existing information on silviculture effectiveness for the Nagagami Forest to inform the next plan, MNR and the public (see Recommendation 18). The second issue is to update the FRI with information about the regenerating forest (see Recommendation 24).

The third issue relates to the FTG survey methods in the *Silvicultural Effectiveness Monitoring Manual for Ontario*[23] (SEMMO) (see Recommendations 19 and 21). This issue is more complex and requires input from corporate MNR.

Recommendation 18: NFML must reanalyze the existing data from the FTG surveys and report on silvicultural effectiveness for each forest unit in the Year10 AR.

To further illustrate the intent of Recommendation 18 a potential solution is offered as an example. The existing LSP data could be pooled to test silvicultural effectiveness at the forest unit scale. Individual stand descriptions using pooled information may be erroneous but might be corrected in successive forest inventories over the course of several FMP cycles in the future. The choices made are not purely based upon statistical methods. Risk perceptions also count. The relative risk or impact of errors in FRI stand attributes for young forest lands is less compared to the risks of errors related to unsatisfactory silvicultural effectiveness for forest units. Regardless of which solution is developed for resolving these long standing issues, the essential ingredient is an agreement on both clearly defined problems and solutions early in the plan process.

The lack of agreement between the audit team's field observations and the data provided by NFML could be remedied by recommending that the SFL collect more information using the SEMMO methods and accelerate the program to eliminate the backlog of area. However, this solution would be prohibitively expensive. Cost effective solutions are within reach and should be provided to SFL holders across the Province through MNR leadership. A recommendation to solve the above problems by investing more SFL money is counter productive, especially given the current forest industry crisis. The action plan to address Recommendation 18 may indeed require more investment but not to the extent required if the solution relied exclusively on SEMMO methods. Given MNR's stake in forest sector competitiveness, this situation deserves careful review.

The SEMMO relies upon FTG methods that evolved from a mixture of 5th year stocked quadrant surveys used by MNR extensively in the 1970s and 1980s and not satisfactorily regenerated (NSR) surveys used to classify recently harvested lands as part of the Forest Management Agreement (FMA) period (circa 1981 to 1997; the stocked quadrant method first emerged in the 1930s in the literature). The stocked quadrant survey consisted of fixed area (e.g. 4 m^2) plots in a systematic grid across a cutover to determine if the regeneration stocking was deemed adequate or in need of follow-up treatment on a stand-by-stand or block-by-block basis.

NSR surveys consisted of ocular estimates to classify and prioritize treatments under the FMA. The NSR survey methods were modified over time to become aerial FTG surveys used to update planning inventories between periods of FRI renewal, which use aerial photograph interpretation methods (approximately every 20-25 years). FTG surveys are often accomplished by using helicopters where SFL holders and MNR representatives agree on the classification of FRI attributes while in the air.

The SEMMO recommends ground-based fixed area plot methods that measure stocking and density with sample intensities designed with some confidence for specific stands or blocks. Both are used in the ARs to support the calibration of strategic models and to comment on overall effectiveness. These generalized methods have evolved from past practices and may be more based upon ritual than reason. Over the years, many forests have collected significant amounts of forest renewal survey data that have seen relatively insignificant levels of analysis and application.

The reliance on this generalized method has several short comings over and above cost. Forest unit definitions cannot change over time in order to detect trends in the AR tables. But definitions are commonly changed for very good reasons between one plan period and another. There is also a lag period between developing the prescription and evaluating the trend. By the time any trends show up in the data they would be self evident and actions would likely already have been implemented to correct for any apparent problems. There is the inherent problem of linking cause and effect with survey data. This is why controlled experiments were conceived of by agronomists in the 1920s which led to the "green revolution".

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[23] MNR. 2001. Silvicultural Effectiveness Monitoring Manual for Ontario. Ont. Min. Nat. Res., Queen's Printer for Ontario, Toronto. 26 pp. + Appendices.

A reasonable approach might consist of stratified random samples of forest unit and Silvicultural Ground Rule (SGR) combinations to deal with calibrating forest estate models (e.g. SFMM) and reporting on silvicultural effectiveness monitoring in ARs. Thirty observations per strata should be sufficient. Note this number is similar to the minimum number recommended in the SEMMO for each block. The opportunity for efficiency is defining the population of interest as the strata rather than the stand or the block. New treatments that pose some risk of failure might be best addressed through controlled experiments (these do not have to be complicated designs requiring expert input). FRI updates might best be done in concert with the new Enhanced FRI initiative. Frequent and informal site inspections might best be used to identify the need for corrective action at the stand level early in the development phase of a regenerating block or stand.

The main point is that full enumeration of stand level performance is not necessary to address general questions related to silvicultural effectiveness or FRI updating needs. Silvicultural effectiveness monitoring and FRI updating are separate undertakings. In addition, a single system or approach for the Province will likely fail to meet the needs of individual forest management units.

Multi-phased sample methods using large and medium scaled photographs are being developed as cost effective alternatives to air-based ocular methods and ground based surveys. MNR is an active partner in these types of projects. SEMMO is under review and there is a Silviculture Effectiveness Monitoring project underway. The purpose of the following recommendation is to further encourage this work bearing in mind the need for cost effective and locally adaptable solutions.

Recommendation 19: Corporate MNR's review of the Silvicultural Effectiveness Monitoring Manual and the Silvicultural Effectiveness Monitoring project for Ontario must consider new developments such as the Enhanced Forest Resource Inventory program and an array of cost effective sampling methods that can be customized to local situations.

3.6.2 Annual Report

Annual reporting requirements were generally met although deficiencies were noted in the Year 10 AR that must be addressed and natural regeneration was not fully reported in all years (see Figure 17, Section 3.8). The text of the ARs minimally described the types of non-compliances occurring on the Forest and the actions taken in response but they did not describe the reasons for the non-compliances or the circumstances surrounding the occurrences. The FMPM requires that AR text *contain a summary of instances of non-compliance*, including:

- The type(s) of non-compliance which occurred most frequently;
- The reason(s) for those occurrences; and,
- The kinds of actions taken.

Recommendation 20: NFML must ensure that Annual Reports contain all required text including full descriptions of non-compliance during the year, reasons for occurrences and actions taken.

There was little to no reporting with respect to negotiations with Native communities within the ARs covering the audit period. The only mention occurred in the 2002-03 and 2003-04 ARs, which simply stated that there had not been any negotiations recorded with First Nations. This contrasted with reports on file at MNR summarizing benefit sharing with Hornepayne First Nation and their involvement in planning. New requirements have removed reporting on EA Condition 34 from the ARs and placed it in the Provincial Annual Report on Forest Management; therefore no recommendation is made herein.

3.6.3 Report of Past Forest Operations

The Year 10 AR included most of the required components and provided reasonable explanations for deviations in planned versus actual results in most cases. However, some components were not included, the report included some factual errors when compared to ARs for the period, information was incomplete for select topics, and full explanations were not always given where required. Examples are discussed below and a recommendation is given at the end of this Section.

The total number of compliance reports reported for the five-year term was not correct when compared to the sum of the individual ARs. It was determined near the end of the audit that reports produced early in the term using the Forest Operations Compliance Inspection System (FOCIS) were not included.

The FMPM requires that Year 10 AR text *include a discussion of the regeneration and silvicultural success to date and any implications on achievement of the long-term management direction for the forest.* For the 2001-06 term, 28% of the 21,269 ha deemed FTG was considered a silvicultural success. A regeneration project is considered a silvicultural success if the depleted area successfully regenerates to the projected forest unit specified in the prescribed SGR. Areas that meet FTG standards for a forest unit different than the projected one are considered a regeneration success, but not a silvicultural success. The text related to this relatively low silvicultural success rate was limited to: *This gives an indication that there may be some adjustments required to the post-renewal succession rules implemented in the 2001 FMP.* This text does not meet FMPM requirements regarding an adequate discussion of results and is thought by the audit team to be a significant understatement given the importance of silvicultural success to the achievement of the long-term management direction for the Forest.

Given the problems identified in Section 3.3.6 of this audit report with FTG survey results, the silvicultural success rates reported in the Year 10 AR are questionable. Once the data is reanalysed as described above (following Recommendation 18), a new evaluation of silvicultural success would be useful for improving the next FMP forecasts of forest condition.

The phrase "silvicultural success" as described in the FMPM regarding Table AR 14 is an unfortunate choice of words. Many basic and extensive treatments will regenerate to several different forest units based upon weather, harvest method and the variable stand conditions common with a given forest unit. These variable outcomes may be consistent with the desired forest condition associated with a long term management direction. Hence even a low "silvicultural success" rate may be quite satisfactory where a forest is managed using extensive treatments. The current definition may have some utility in forests that are intensively managed but few forests in Ontario have more than 30% under intensive forms of forest regeneration.

The SFMM post harvest succession matrix, showing the expected proportional shifts from one forest unit to another are based both upon the expected "success" and the range of proposed SGRs that are forecasted to be in use. Unlike SGRs that show a single pathway from current forest unit to the expected forest unit, the succession matrix shows multiple pathways.

The post harvest succession SFMM matrix used in the 2006-11 FMP had reasonable assumptions of the range of expected future forest units. But the deficiencies in the reporting and underlying data make the case for the assumptions used in SFMM somewhat tenuous. Some of these deficiencies are the responsibility of the SFL holder but there are some systemic weaknesses that only MNR can resolve.

What is really of interest is not so much how carefully we control forest unit composition on a stand by stand basis (often with expensive inputs such as planting and tending with herbicides) but how well are we doing in forecasting the future forest condition. The current reporting system is insufficient to address this issue. A review by MNR of the way in which SFLs report on silvicultural effectiveness in the FMP and Annual Reports is warranted.

Recommendation 21: Corporate MNR must review how it requires reporting on silvicultural success in the FMPM (Table AR-14) to better reflect field conditions and support the assumptions used in forecasting future forest condition.

Text regarding objective achievement in the Year 10 AR had some errors and omissions. Under 'Forest Diversity' the substantive decrease in area of SB1 from 113K ha to 100K ha is counter to the desired condition on this Forest and was not discussed. Under 'Social and Economic Assessment' the underachievement of harvest area (Table AR-1) was not discussed. Rather, the overachievement of volume was highlighted (which does not confirm objective achievement but points to problems with yield curves). Also, for wildlife habitat, RPFO-16 indicated large changes in habitat for some species between terms as a result of habitat matrix changes but, although not a requirement, an evaluation of what actual changes had occurred (i.e. running the same matrix for both plans) would have been more informative. For 'Silviculture', underachievement of actual versus planned site preparation (mechanical and chemical) and tending treatments was not discussed nor was there a discussion of the effectiveness of renewal treatments or of projected growth versus actual growth.

In addition, the progress on the 2002 IFA action plan was not discussed. Rather, the action plan and 2006-11 FMP were referenced. The Year 10 AR is a stand alone document and pertinent information should have at the least been appended to the document.

Section 3.1 of the Year 10 AR discussed forest disturbances versus the disturbance template results. There were numerous errors between text and Table AR-15 in this section and there was no assessment of implications or recommendations. Other notable issues with the Year 10 AR included discrepancies between values in the text and Table AR-11, and progress towards a desired future forest condition was not discussed, as required.

The audit team notes that the 2004 FMPM also assigns responsibilities to MNR to ensure the completeness and accuracy of ARs. As a consequence of the number and significance of the problems noted above, the audit team makes the following recommendation:

Recommendation 22: NFML, assisted by MNR, must update the Year 10 Annual Report for the 2001-06 FMP to ensure it meets all FMPM requirements, values in all tables are correct, and values in text and related tables are consistent.

3.7 Achievement of Management Objectives and Forest Sustainability

3.7.1 Achievement of Management Objectives

According to the FMPM, objectives are developed for benefits or outcomes that can be achieved by managing forest cover. The audit team reviewed the achievement of objectives associated with the 2001-06 and 2006-11 Nagagami Forest FMPs. A summary of the objectives, with the audit team's assessment of their achievement, is presented in Table 4 and Table 5.

Table 4. 2001-2006 Nagagami Forest FMP Objectives.

Objective	Year 10 Annual Report Author's Assessment of Achievement	Audit Team Comments
Forest Diversity: To maintain a forest that through time has all the attributes of a natural, fire driven boreal forest ecosystem at both the stand and landscape level.		
3.4.1.1 Forest Units To maintain forest ecosystems described in terms of forest units similar to the ranges that would occur in a natural fire-driven Boreal Forest and the analysis of the historical forest condition.	No substantive changes in the forest composition and age class structure. Shifts between forest units and small changes in age class structure; all objectives were achieved based on the natural bound acceptable levels.	Partially agree based on audit field observations but found problems with FTG monitoring system as described in Section 3.6.1.
3.4.1.2 Forest Age Structure To maintain a balanced age class structure and to maintain a proportion of the forest unit groups within immature, mature and over-mature age classes similar to the ranges that would occur under natural post fire conditions in the Boreal Forest and the analysis of the historical condition.	No substantive changes in the forest composition and age class structure.	Disagree based on age class that will shift to a younger forest inverse "J" class area distribution.
3.4.1.3 Landscape Diversity Monitor the spatial landscape diversity indices for the Nagagami Forest using LEAPII and restrict the changes in landscape diversity.	All objectives were achieved based on the natural bound acceptable levels.	Agree. Selected management alternative above lower bounds of natural variation at the desired future forest condition.
3.4.1.4 Landscape and Stand Level Disturbances To maintain the forest spatial structure by emulating natural patterns of disturbance in terms of patch size, patch separation, patch shape, patch edge to area ratio, patch structural elements and patch residuals at both the landscape and stand levels.	All objectives were achieved based on the natural bound acceptable levels.	Agree. Implemented strategy to reduce fragmentation and move towards natural disturbance targets.
Social and Economic: To maintain and where feasible enhance the social, economic, recreational and cultural benefits available from the Nagagami Forest.		
3.4.2.1 Timber Supply To provide a continuous and predictable sustainable supply of wood to the user mills dependent on the Nagagami Forest according to the wood supply targets, while still meeting forest diversity objectives. Promote the optimal utilization of available wood products through best end use in order to contribute the greatest value-added to the local economy for each cubic metre of timber harvested. Promote the fullest and most efficient utilization of secondary forest resources (e.g. low quality wood and marginally commercial species) in order to maximize the yield of forest products from each hectare of forested land being harvested.	The predictions of products, benefits and values were reliable and the plan successfully contributed to mill and community stability.	Most wood supply commitments met or exceeded for 2001-06 term. Longlac Wood Industries received only 18% (9,000 vs. 50,000 m^3) of its committed poplar veneer volume. Reduced market for Po pulp was a contributing factor. Noted very low birch veneer recovery (~87 m^3/yr) although no specified commitment to Columbia Forest Products.

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Table 4 continued.

Objective	Year 10 Annual Report Author's Assessment of Achievement	Audit Team Comments
3.4.2.2 Tourism & Recreation **3.4.2.2.1 Commercial Tourism** Maintain a suitable and sustainable environment for the remote tourism and the road-based tourism industries by minimizing and mitigating the impacts of forest management operations as much as possible.	Except for anecdotal information, there is no data available to determine the overall health of the [tourism] industry or the affect that the 2001-2006 selected management alternative (SMA) would be having; Forest management activity is either neutral or negative to the prosperity of the remote tourism industry and normally neutral to positive for road based tourism establishments.	Agree.
3.4.2.2.2 Land & Water Based Recreation Maintain a suitable environment for recreational use of the forest.	Because the implementation of the SMA required the construction of more roads, and these roads are used to provide access for baiting and hunting, it is reasonable to expect that there was a net benefit to the bear hunt operators.	Agree in terms of application of identified strategies.
3.4.2.2.3 Other Commercial Activities Minimize negative impacts of forest management on other commercial forest activities on the Nagagami Forest such as trapping, mineral exploration, commercial berry picking, etc.	The 2001-2006 plan did not provide the information required to determine whether there were beneficial or detrimental impacts for trappers as a result of forest management activities conducted during the planning term.	Agree.
3.4.2.3 Cultural Heritage To protect cultural heritage values that may be affected by forest management.	No comment provided.	Prescription developed for protection of high potential values.
3.4.2.4 First Nations Protect natural resource features, land uses and values which are specifically used by, or of importance to local First Nation communities that may be affected by forest management operations.	No comment provided.	Native Background Information Reports and Report on Protection of Identified Native Values were prepared.
3.4.2.5 Provincial Parks Ensure that due consideration is given to the management plans, goals, objectives and concerns of Nagagami Lake and Nagagamisis Provincial Parks in the course of developing the forest management plan for the Nagagami Forest.	No comment provided.	Met.
Forest Cover: Provide forest cover for values, which are dependent on forest cover.		
3.4.3.1 Wildlife Habitat Maintain an adequate supply of habitat for all indigenous wildlife species.	Greatest decline being the least flycatcher at 13%. Some habitats showing an astonishing increase due to refinements made to the habitat matrix.	Agree.

Continued on next page.

Table 4 continued.

Objective	Year 10 Annual Report Author's Assessment of Achievement	Audit Team Comments
3.4.3.2 Marten Habitat Ensure that all aspects of marten habitat requirements are maintained or enhanced on the Nagagami Forest through the implementation of the *Forest Management Guidelines for the Provision of Marten Habitat (Watt et al, 1996)*[24].	No comment provided.	Guideline requirements applied (e.g. marten cores identified, stand level requirements implemented).
3.4.3.3 Moose Habitat To maintain or enhance moose wintering and foraging habitat where it exists and protect critical moose habitat on the Nagagami Forest over time.	No comment provided.	Harvest boundaries respected; spray boundaries could be adjusted to provide more browse; application of MAFA prescription needs review.
3.4.2.1 (sic) Wildlife Habitat Units Ensure that individual wildlife habitat units presently found on the Nagagami Forest will be maintained or enhanced in terms of relative abundance and functionality.	Greatest decline being the least flycatcher at 13%. Some habitats showing an astonishing increase due to refinements made to the habitat matrix.	Agree.
3.4.2.2 (sic) Rare Flora, Fauna and Ecosystem To maintain, protect, or enhance where needed, critical habitat for vulnerable, threatened, and endangered species on the Nagagami Forest.	No comment provided.	Prescriptions developed for protection of osprey and heron nests. Initial steps taken to identify and protect woodland caribou habitat.
3.4.3.6 Water Quality and Fish Habitat Ensure the protection and maintenance of water quality and fish habitat where forest management activities occur.	No comment provided.	Prescriptions to protect fisheries values implemented; water crossing installations have improved; many water crossings upgraded.
3.4.3.7 Woodland Caribou Habitat No target for caribou habitat can be established specific to the Nagagami Forest, as the area within the forest where the caribou presence is suspected is too small for establishment of caribou ranges. However, certain strategies can be implemented.	No comment provided.	Initial steps taken to identify and protect woodland caribou habitat.

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[24] MNR. 1996. Forest Management Guidelines for the Provision of Marten Habitat. Queen's Printer for Ontario. 20 pp. + Appendices.

Table 4 continued.

Objective	Year 10 Annual Report Author's Assessment of Achievement	Audit Team Comments
Silviculture: Provide a healthy, productive and sustainable forest ecosystem at the management unit level.		
3.4.4.1 Application of Silviculture Program Manage the forest in a manner that is consistent with maintaining and improving the productivity, health, vigour and quality of the forest at a sustainable level while maximizing the efficient use of finite financial resources and lead the forest to the desired future forest condition.	Renewal levels and successes were in line and supporting the level of harvest. Percent of planned completed: • Natural regen. 38% (44%) • Planting 95% (110%) • Mechanical SIP 63% (73%) • Chemical SIP 68% (77%) • Aerial tending 47% (54%)	Agree. Note: bracketed figures to the left were adjusted to account for the fact that 87% of the planned harvest area was depleted. Total renewal area (natural and planted) was 85% of average total harvest area 1997-2006.
3.4.4.2 Quality of Timber Improve the quality of timber over time to provide the optimum level of desired wood products to mills dependent on the Nagagami Forest.	No comment provided.	Good mix of timber provided during term. Noted very low birch veneer recovery (~87 m^3/year). Utilization improvement from last IFA but still some exceptions noted. Utilization standards in forest management documents not consistent. See Recommendation 11.
3.4.4.3 Productive Forest Area and Forest Productivity Maintain or increase the productive forest area of the Nagagami Forest.	Table RPFO-13 shows managed forest available for timber production increased by 12,555 ha.	Agree. Refinements in tracking no-harvest reserves have led to large changes in available area through time. Not well explained in text.
3.4.4.4 Application of Forest Herbicides The objective is to continue to use this valuable silviculture tool in a responsible manner while working with other users of the forest on education and consultation.	No comment provided.	Agree.
3.4.4.5 Fire Processes Recognize fire as an integral component of the ecological processes occurring within the boreal forest and utilize fire, when feasible, to help maintain the sustainability of the forest.	No comment provided.	Likely will not be met. See Suggestion 12.
3.4.4.6 Tree Genetics and Seedling Quality Ensure the preservation of the local tree gene pool.	No comment provided.	Likely to be met.
3.4.5 Integrated Resource Management Co-ordinate forest management such that benefits to all users can be optimized while conflicts resulting from forest operations are minimized consistent with the *Wawa District Land Use Guidelines* and the *Hearst District Land Use Guidelines*.	No comment provided.	Significant, unresolved road access issues remain. See Recommendations 6 and 23 and Suggestions 5, 6 and 17.

Table 5. 2006-2011 Nagagami Forest FMP Objectives.

Objective	Audit Team Assessment of Progress Toward Achievement	See Recommendation or Suggestion
Forest Diversity: To maintain a forest that through time has all the attributes of a natural, fire driven boreal forest ecosystem at both the stand and landscape level.		
3.4.1.1 Forest Unit Area A forest ecosystem expressed in terms of forest units, which has area within each forest unit similar to the range of area that would occur in a natural fire-driven Boreal Forest described by the Natural Benchmark run and the analysis of the historical condition.	On track. Modelling projects indicators maintained within acceptable bounds; NDPEG applied; Problems with FTG monitoring system as described in Section 3.6.1	See Recommendation 18.
3.4.1.2 Forest Age Structure A balanced age class structure in the immature and mature classes with a proportion of the forest unit groups within the over-mature age class similar to the range that would occur under natural post fire conditions in the Boreal Forest and the analysis of the historical condition. The forest unit group should consist of a balance between each representative forest unit. The intent of the objective is for the forest age-class structure to provide for a functional old growth condition now and in the future.	On track provided that operated harvest area by forest unit and age-class is in relative agreement with SFMM forecasts.	
3.4.1.3 Landscape and Stand Level Disturbances A forest structure spatially emulating natural patterns of disturbance in terms of patch size, patch separation, patch shape, patch edge to area ratio, patch structural elements and patch residuals at both the landscape and stand levels.	On track. Implementing strategy to reduce fragmentation and move towards natural disturbance targets.	
Social and Economic: To maintain and where feasible enhance the social, economic, recreational and cultural benefits available from the Nagagami Forest.		
3.4.2.1 Wood Supply A sustainable and predictable supply of wood to the user mills dependent on the Nagagami Forest. Promote the optimal utilization of available wood products through best end use in order to contribute the greatest value-added to the local economy for each cubic metre of timber harvested. Promote the fullest and most efficient utilization of secondary forest resources (e.g. low quality wood and marginally commercial species) in order to maximize the yield of forest products from each hectare of forested land being harvested.	No values available at time of writing report. Planned values from FMP-24 suggest most commitments to be met except birch and poplar veneer to Columbia Forest Products and Longlac Wood Industries poplar pulp a little short. Uncertain economic climate within the forest industry may impact the final result.	
3.4.2.2 Tourism & Recreation **3.4.2.2.1 Commercial Tourism** Minimize the impacts of forestry operations on the remote and road-based tourism industry.	Strategies afford protection to remote tourism but could be improved.	See Suggestion 7.

Continued on next page.

Table 5 continued.

Objective	Audit Team Assessment of Progress Toward Achievement	See Recommendation or Suggestion
3.4.2.2.2 Land & Water Based Recreation Minimize the impacts of forestry operations on recreational uses of the forest.	Unresolved access issues with local road-based recreational forest users.	See Recommendations 6 and 23 and Suggestions 5, 6 and 17.
3.4.2.2.3 Other Commercial Activities Minimize negative impacts of forest management on other commercial forest activities on the Nagagami Forest.	Not clear that strategies implemented resulted in minimizing negative impacts.	See Recommendations 6 and 23 and Suggestions 5, 6 and 17.
3.4.2.3 Cultural Heritage Protect cultural heritage values that may be affected by forest management.	On track. High potential cultural heritage sites identified and prescription implemented for protection.	
3.4.2.4 First Nation Protect natural resource features, land uses and values which are specifically used by, or of importance to local First Nation communities that may be affected by forest management operations.	On track except as relates to access concerns of Hornepayne Aboriginal Community (HAC) and the need for additional efforts to involve Constance Lake First Nation may be warranted.	First Nation values protected as identified by HAC; however, concerns from HAC regarding use of roads not adequately addressed; documentation of consultation incomplete. See Recommendations 3, 6 and 23, and Suggestions 2, 5, 6 and 17.
3.4.2.5 Provincial Parks Ensure that due consideration is given to the management plans, goals, objectives and concerns of Nagagami Lake and Nagagamisis Provincial Parks in the course of developing the forest management plan for the Nagagami Forest.	Met Parks/protected areas identified on values map. Comments of Parks staff considered during planning.	
Forest Cover Provide forest cover for values, which are dependent on forest cover.		
3.4.3.1 Marten Habitat Provide marten habitat on the Nagagami Forest through the implementation of the *Forest Management Guidelines for the Provision of Marten Habitat (Watt et al, 1996).*	On track. Guideline requirements applied (e.g. marten cores identified, stand level requirements implemented).	
3.4.3.2 Moose Habitat Maintain moose wintering and foraging habitat where it exists and protect critical moose habitat on the Nagagami Forest over time.	Habitat within acceptable levels for SMA; spray boundaries could be adjusted to provide more browse; application of MAFA prescription needs review.	See Recommendations 9 and 10.
3.4.3.3 Rare Flora, Fauna and Ecosystem To maintain, protect, or enhance where needed, critical habitat for species of special concern, threatened, and endangered species on the Nagagami Forest.	On track. Prescriptions developed and implemented for known values.	
3.4.3.4 Water Quality and Fish Habitat Ensure the protection and maintenance of water quality and fish habitat where forest management activities occur.	On track. Reserves applied and respected; improvements in water crossings evident.	

Continued on next page.

Table 5 continued.

Objective	Audit Team Assessment of Progress Toward Achievement	See Recommendation or Suggestion
3.4.3.5 Woodland Caribou Habitat The objective for this Forest Management Plan is to maintain and restore woodland caribou habitat on the forest with an emphasis on the area west of Highway 631 at a rate at which the forest industry can adapt.	On track. Two townships identified where woodland caribou are known to occur; long term deferral of harvest; discussions with adjoining units regarding co-ordinated approach.	
Silviculture: Provide a healthy, productive and sustainable forest ecosystem at the management unit level.		
3.4.4.1 Silviculture Program Manage the forest in a manner that is consistent with maintaining and improving the productivity, health, vigour and quality of the forest at a sustainable level while maximizing the efficient use of finite financial resources and lead the forest to the desired future forest condition. Take advantage of the boost in productivity provided by the richer sites on the forest.	On track.	
3.4.4.2 Productive Forest Area and Forest Productivity Minimize the loss of productive forest area to roads and landings.	Typical amount of loss to roads/landings in model. Need to determine actual amounts through time.	
3.4.4.3 Application of Forest Herbicides The objective is to continue to use this valuable silviculture tool in a responsible manner while working with other users of the forest on education and consultation.	On track.	
3.4.4.4 Fire Processes Recognize fire as an integral component of the ecological processes occurring within the boreal forest and utilize fire, when feasible, to help maintain the sustainability of the forest.	Likely will not be met.	See Suggestion 12.
3.4.4.5 Tree Genetics and Seedling Quality Ensure the preservation of the local tree gene pool.	On track.	

The persistent access issue on the Nagagami Forest indicates general local public dissatisfaction with the management of recreational opportunities. While the strategies associated with the 2006-11 FMP objective 3.4.2.2.2 to *Minimize the impacts of forestry operations on recreational uses of the forest* – were carried out, the target for this objective was *to minimize the impacts of forestry operations on existing recreational values identified on the values map*. Given that the public access point on the Kabinakagami River is an existing recreational value identified on the values map, the proposed abandonment of the McDuff/Expansion Road conflicts with this target and does not fully support the achievement of this objective.

The 2006-11 FMP objective 3.4.2.2.3, for *Other Commercial Activities* was to *minimize negative impacts of forest management on other commercial forest activities on the Nagagami Forest*... and included a list of many different types of users, including trappers, tourism operators, bait-fish operators, mineral exploration, commercial berry picking activities, etc. Strategies included (but were not limited to) identifying areas where forestry operations could have a negative impact on other commercial values through AWS notifications, review of values information and consultation with interested parties, developing AOC prescriptions and operating procedures to maintain other commercial values whenever possible, and planning road access to harvesting operations, thereby facilitating opportunities for other commercial uses. Although these strategies were carried out, it is not clear that they resulted in minimizing negative impacts. For example, building a new road which will "facilitate opportunities for other commercial users" may or may not mitigate the negative impact of the closure of a road that led to a key area for a particular commercial interest.

When the audit team asked MNR what was being done to ensure that other commercial users have continued access to their licence areas (if applicable), MNR explained that these users are given passes to use restricted roads, but when roads are abandoned the same conditions apply as for all forest users – traditional means are still available to them; however, roads are not considered traditional means.

This response is similar to that provided to the Hornepayne Aboriginal Community regarding road closures, mentioned in Section 3.2.3. The 2006-11 FMP objective for *First Nation* was to *protect natural resource features, land uses and values which are specifically used by, or of importance to local First Nation communities that may be affected by forest management operations*. However, a road could be considered a natural resource feature, land use or value that is specifically used by or of importance to local First Nation communities; the Chief's letter indicates that some roads are. Although it is technically true that these means of access still exist, road-based access has been available for 30-50 years in several areas[25]. The reference to continued availability of "traditional methods" raises the question: when does a method of access become traditional? This question is not intended to reflect upon traditional Aboriginal activities, but simply the process of any group of people becoming accustomed to a situation over time, regardless of their ancestry or culture.

MNR could not provide the audit team with definitive guidance within MNR policies, manuals, guides or other sources of direction regarding the definition or application of the concept of access by traditional means, despite the fact that the phrase is used widely within MNR. The audit team is familiar with MNR's application of the term as it is employed when developing prescriptions to protect existing remote tourism values and associated fisheries, and it is referred to in the *Management Guidelines for Forestry and Resource-Based Tourism*; the idea being that it is reasonable to place certain restrictions on access to designated remote tourism lakes where a history of road access had not been long-established, without totally preventing access by persons who are not guests of the tourism establishment. However, in the case of the McDuff Road abandonment, the protection of remote tourism values or high value fisheries is not at issue and the use of roads and motorized methods of access are the long-standing means of access. Therefore, it appears that clarification of this term is required within MNR.

Recommendation 23: Corporate MNR must:

- **a) define the concept of traditional means of access, while considering the long-standing use of many forest access roads in Ontario,**
- **b) provide clear guidance on application of the concept in practice, while considering MNR's various commitments to Ontarians, and**
- **c) effectively communicate this information within MNR, and to Aboriginals, stakeholders and the interested public.**

Finally, the audit team noted that essentially the same response to road closure concerns was provided to commercial users, the Hornepayne Aboriginal Community, and the general public. For example, when reviewing the signed form letters received protesting the NAWOA proposal, some were signed by members of local Aboriginal Communities (stamped by the community office), and some were signed by other commercial users. Although the words used are the same, the context is different, and this should be reflected in the response. It is possible that the concerns are the same for all those who wrote in – i.e. dissatisfaction with the general access situation – but for other commercial users and Aboriginal communities, this cannot be assumed. Although the volume of letters received may have been overwhelming, specially recognized groups should be treated as such when they come forward with concerns.

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[25] For example, the Hornepayne Creek Road was built in the mid-1970s and the McDuff Road was built in the late 1960s-early 1970s; in addition, several roads include older segments branching off the highway.

Suggestion 17: The 2011 Nagagami Forest planning team should recognize the specific concerns of individual interest groups when preparing responses to comments received from these groups.

3.7.2 Review of RPFO Assessment of Sustainability

The Year 10 AR contained a discussion of the assessment of sustainability during the term 2001-06. Such assessments are complicated by the fact that they rely heavily on long-term trend data related to indicators of forest sustainability. However, data collection on many indicators has only recently begun, since these requirements were introduced with the 1996 FMPM. The audit team found some shortcomings in the Year 10 AR, as described in Section 3.6.2, that would have impacted the information presented in that report. A summary of comments by the Year 10 AR author with respect to the achievement of forest sustainability are provided below.

> *The results of the annual report assessment of the operations evaluation, the objective achievements, and sustainability indicate that the Nagagami Forest is being managed in a sustainable fashion. The disturbance sizes are moving towards the natural range, the indicators of sustainability are within the acceptable range, and the renewal and FTG levels are keeping pace with the level of harvest.*
>
> *All indicators of sustainability, by the five broad indicator criteria, were sustainable and led to the conclusion that the operations planned and implemented during the 2001-06 FMP period were sustainable.*

The Year 10 AR author summarized why the various indicators were considered sustainable within Figure 10 of the Year 10 AR, which is presented in Figure 16 in this audit report. "Yes" indicates the author's conclusion regarding sustainability.

Source: 2001-06 FMP Year 10 Annual Report.

The text regarding determination of sustainability lacked detail in some respects or contained possible errors. For example, managed Crown forest was stated to have decreased from 343K ha to 320K ha from 1997-2006 (~7% in less than 10 years); without adequate rational this seems excessive. In fact, the decline may have been greater given that Table RPFO 14 shows the managed Crown forest area in 1997 at 364K ha. Also, achievement of AHA utilized was stated but not examined in any detail. Habitat results for selected wildlife species are not directly comparable between plans for all species listed due to changes in the wildlife habitat matrix between plans, although this was not explained. Deficiencies such as these should be corrected as per Recommendation 22.

The Year 10 AR included a detailed assessment of changes in the levels of employment at the local mills, and in this respect exceeded the requirements of the 2004 FMPM. The discussion also included a detailed assessment of trapping business on the Nagagami Forest, which was well done and represented an extra effort by the author (and MNR, which supplied trapping data). In general, the socio-economic assessment in the Year 10 AR was well done and reflected a balanced view of many of the socio-economic factors on the Forest. Although the Report did not discuss the local access issue, which is clearly related to social sustainability, the audit team recognizes that the SFL holder has a limited ability to address this issue.

Summary of Indicators of Sustainability Assessments				
Forest Condition & Ecosystem Productivity	Net Primary Productivity	Calculated NPP is 272.4 constant for 2006-2011	RPFO-17	Yes
	Total Productive Crown Forest	Total productive Crown forest was 379,552 in 1997, decreased to 371,919 hectares in 2001 and increased to 380,701 in 2006. Therefore the productive Crown forest was maintained as much as possible and unecessary losses were avoided during the period.	RPFO-18	Yes
Multiple Benefits to Society	Managed Crown Forest	Managed crown forest area available for timber production was maximized during the AR term. It was 343,905 hectares in 1997, declined due to identification of no-harvest reserves to 307,933 hectares and rebounded due to refinements in the no-harvest reserves to 320,487 in 2006.	RPFO-13	Yes
	Percent of AHA utilized	A total of 86% of the available harvest area was utilized.	RPFO-18	Yes
	Selected species habitat	22 selected species preferred habitats are within the bounds of natural variation.	RPFO-16	Yes
	Value Added	Operations are estimated to have provided $351 million value added over the 2001-2006 FMP period	RPFO-18	Yes
Soil and Water Conservation	Ratio of area in riparian reserves to length shoreline adjacent to timber harvest	All of the riparian areas adjacent to timber harvest have been protected with reserves	RPFO-18	Yes
	Water Yield	Could not define whether NAF water yield was consistent with the water yield objective for the sub-regional watershed due to lack of data	RPFO-18	na
Accepting Society's Responsibility for Sustainable Development	% of Native communities in or adjacent to the management unit involved in the special Native consultation option	Two communities were involved in the 2001-2006 special consultation for Native communities	RPFO-18	Yes
	Local citizens committee's self-evaluation of their effectiveness	The LCC rated themselves at 7.5 out of 10 based on their input into the plan, communications with the planning team and satisfaction with plan results.	RPFO-18	Yes

Source: 2001-06 FMP Year 10 Annual Report.

Figure 16. Summary of Indicators of Sustainability Assessments.

3.7.3 Review of the Comparison and Trend Analysis of Planned versus Actual Forest Operations

The auditee prepares the Comparison and Trend Analysis of Planned versus Actual Forest Operations Report (TAR) to provide historical information on trends and changes associated with forest management over several planning terms. NFML prepared the TAR which covered three planning terms (1997-02, 2001-06, and 2006-11). The term of the first plan was shortened to four years resulting in the next FMP being started one year early. Only planned statistics are available for the current plan since reporting information is not required until November, 2007. Therefore, information is available for nine years of operations.

The total productive forest remained relatively constant (approx. 380,000 ha) while the available productive area varied due to adjustments intended to better represent the forest during modelling. Significant trends were apparent in the increase of depleted lands and a corresponding decrease principally in the area of spruce and poplar working groups. The increase in depleted area was attributed to improved mapping and inventory updates of harvest and natural depletions. Total barren and scattered and depleted area as of 2006 was 71,553 ha or 19.6% of the production forest landbase. Expressed another way, the area represents approximately 18 years of depletions (harvest and natural) at average depletion rates experienced during the 2001-06 FMP term. The vast majority is classified as depleted with approximately 34,000 ha of the depleted area between 11 and 20 years old. The total area of barren and scattered plus depleted has remained virtually unchanged since the 2002 IFA. The audit team at that time expressed concern that the amount being carried was too much and suggested a more appropriate level of 10-15% of the production forest area. There is an overall need for improved inventory maintenance as described in Sections 3.6.1 and 3.7.3 and Recommendations 18 and 24.

Forest units have generally followed regional standardized units since 2001 with minor variations to reflect specific circumstances on the Nagagami Forest. Planned harvest area and volumes exceeded actual utilization levels; however, in the audit team's experience the overall actual utilization levels were higher than most forests across the Province. Poplar and white birch continue to be the species most underutilized, although poplar utilization increased significantly between the 1997-02 and 2001-06 FMPs. The balance of species remains relatively constant. Some movement is apparent in age class structure with the mid-rotation age class gap beginning to fill and a slight increase in the oldest age classes.

Planned renewal (artificial and natural) levels were comparable to planned harvest levels in all terms. Natural regeneration was not being fully reported for the 1997-02 FMP, as noted in the 2002 IFA, therefore the actual renewal levels as reported for that term are not particularly useful. Actual harvest area for the 1997-02 and 2001-06 terms compared to actual and planned renewal levels for the 2001-06 and 2006-11 terms respectively suggests that overall renewal efforts are keeping pace with the harvest. The area chemically tended declined by approximately 30% between the 1997-02 and 2001-06 FMPs; however, it remains an important method of managing vegetative competition on the Forest.

Essentially all of the area harvested between 1992 and 1997 has received a regeneration assessment. As of 2006 approximately 55% of the harvested area was declared FTG. About 10% of the original harvest area is considered not available for regeneration due to roads and landings, leaving approximately 7,500 ha to achieve FTG status. As noted in the TAR, assessment surveys will continue until these areas are successfully regenerated.

The following summary of trends, and audit findings related to these trends, are a concern:

- A backlog of barren and scattered;
- A backlog in Free-to-Grow survey area;
- Reporting shortfall in natural regenerating areas;
- Weaknesses in Free-to-Grow survey methods; and,
- Loss of area harvested to roads (10% of harvest area).

Most of these concerns reflect reporting and monitoring problems. Field observations suggest that forest health is being maintained but the reported evidence for this observation is weak. The recommendations presented earlier will help improve the situation but a holistic review should help ensure that progress is being made. This view may take into account the Province's Enhanced FRI program or the initiatives that may help address the concerns raised in the audit. To complement Recommendations 18 and 21, the following recommendation is offered:

Recommendation 24: NFML must update the forest resource inventory to deal with areas that have been disturbed over the last thirty years.

3.7.4 Achievement of Forest Sustainability

Prior to the implementation of the CFSA the objective of forest management was to provide timber to the forest industry in a manner consistent with sound environmental practices and to provide for other uses of the forest. With implementation of the CFSA in 1995, recognition was given to the importance of forest sustainability. It should be kept in mind that the means of achieving forest sustainability under the CFSA is through the management of forest cover. According to the CFSA, forest sustainability is defined as "long-term Crown forest health". Two key principles are associated with forest sustainability:

- *Large, healthy, diverse and productive Crown forests and their associated ecological processes and biological diversity should be conserved.*
- *The long-term health and vigour of Crown forests should be provided for by using forest practices that, within the limits of silvicultural requirements, emulate natural disturbances and landscape patterns while minimizing adverse effects on plant life, animal life, water, soil, air and social and economic values, including recreational values and heritage values.*

An assessment of forest sustainability occurs at the time an FMP is prepared and again following FMP completion, and is reported in the RPFO and/or the Year 7 and Year 10 Annual Reports.

The methods of planning for and assessing the achievement of forest sustainability are described in the FMPM. It begins with an eight-step process that includes gathering background information, setting objectives and developing strategies, identification and analysis of management alternatives, selection of a preferred management alternative, and the identification of specific areas for forest operations. Throughout the process, opportunities are available to the public to participate and provide input into the development of the FMP. The assessment of achievement of forest sustainability involves the analysis of forecasts and trends associated with a set of criteria and indicators of sustainability given in the FMPM.

In developing its opinion on the achievement of sustainability on the Nagagami Forest the audit team considered the following:

- 2001-06 and 2006-11 Nagagami Forest FMPs, including achievement of the objectives and targets set in those plans;
- AWSs associated with the above FMPs;
- 2001-02 to 2005-06 ARs;
- 1997-2001 RPFO (conclusions) and Year 10 AR;
- TAR;
- Input from staff and shareholders of NFML, MNR Wawa District, and members of the LCC;
- Written input received by the public; and,
- Implementation and effectiveness of forest management activities on 40 field sites.

It is the audit team's view that the Nagagami Forest is being sustained as it relates to the environmental and portions of the economic aspects of sustainability. Collectively, planned objectives are generally being met or are on track to be met. Harvest levels are regulated and followed and 87% of the projected harvest was completed during the term of the 2001-06 FMP. The forest is regenerating, as confirmed by audit team field observations, and there are no significant changes in the overall balance of forest units, with the exception of a decrease in SB1 accompanied by increases in spruce-leading mixedwood forest units over the term of the 2001-06 FMP. Current area by forest unit is also generally consistent with levels projected at the desired future forest condition.

Silvicultural effectiveness, however, needs additional consideration as discussed in Section 3.6.3. The Year 10 AR shows a low level of silviculture success. Although the Forest is regenerating to fully stocked stands with species compositions consistent with plan objectives, the renewal standards in the SGRs are not being achieved. This appears to be a planning, data collection and reporting problem more than a forest renewal program shortfall. The audit team offered four recommendations to address the data collection and reporting problems (Recommendations 18, 19, 21 and 22).

Environmental considerations are addressed through identification and protection of values and planning and operations address wildlife habitat and other ecological requirements. Significant economic benefits accrue to society through the harvesting and processing of the timber resource. Improvements in forest management since the 2002 IFA were evident. Both NFML and MNR take their responsibilities seriously and undertake their work in a professional manner.

However, there remains a key aspect associated with societal benefits from forest management in which issues remain unresolved. These relate specifically to opportunities available for local road-based recreational and Aboriginal forest users and small, non-timber commercial operators to access the Forest. The FMP contains stated objectives to minimize negative impacts of forest management on other commercial forest activities and on recreational uses of the forest; however, MNR decisions regarding road use and maintenance of access into areas with a long history of public access do not appear to support these objectives. In addition, much of the Forest cannot be accessed by road for at least portions of the year and road access to all of the large lakes, outside of Nagagamisis Provincial Park, is prohibited in order to protect remote tourism enterprises. The RPFO and Year 10 AR do not adequately address the achievement of these objectives and a great deal of dissatisfaction with the situation is being expressed by local residents. The audit team has made recommendations that may help in resolving the issue.

3.8 Contractual Obligations

Area, Term and Pricing

NFML complied with the requirement to pay stumpage to MNR; however, problems remain in the Peterborough MNR office's system for tracking stumpage fees, as discussed in relation to Recommendation 29 and the previous IFA later in this section.

Wood Supply Commitments and Overlapping Licences

There were three small overlapping licences, totalling approximately 40 ha issued during the term of the audit. The ARs showed minor wood volumes totalling a few hundred cubic metres harvested by other licensees for specialty products or fuel wood.

The 2001-06 FMP contains wood supply commitments for the 2001-06 term including the first four years of the audit term. For simplicity, the full 2001-06 term is examined herein. Table 6 summarizes total and annualized committed and actual volumes for 2001-06. Committed values are taken from 2001-06 FMP Table FMP-24 and actual values are taken from the Year 10 AR (2005-06). All commitments were met except for poplar veneer to Longlac Wood Industries, which received about 18% of the 50,000 m^3 committed. Following a review of the SFL document and a discussion with Longlac Wood Industries staff, it was noted that Table FMP-24 incorrectly classified its commitment as only veneer rather than a combination of veneer and pulp. Nonetheless, according to Longlac Wood Industries staff, the low wood supply was due to an over-allocation of poplar prior to 2001 and to its reduced poplar pulp market during the 2001-06 period. Also notable for the term was the very low birch veneer recovery; however, no specific commitment was made at the time.

Most commitments were planned to be met or nearly met in the 2006-11 FMP. Nearly met are Longlac Wood Industries poplar pulp and Columbia Forest Products poplar veneer at 78% and 88%, respectively. The exception is Columbia Wood Product's planned birch veneer commitment, which is quite low at about 44%. Considering the actual annual level for this commitment of 87 m^3 for the 2001-06 period (Table 6), the anticipated 663 m^3/year for the 2006-11 period is a substantial increase. Actual values will need to be evaluated during the next audit.

Wood supply commitments on the Nagagami Forest changed during the audit term for a number of reasons including the transfer in May, 2004 of the forest license from ACI to NFML, an end-user shareholder group. The SFL document was updated following the license transfer to reflect the new management structure and wood supply commitments. The 2006-11 FMP included the new wood supply arrangements.

Table 6. Total and Annualized Committed and Actual Volumes (m^3).

2001-2006		Total	Annualized
Columbia Wood Products Po veneer	Commitment	All	All
	Actual	127,192	25,438
	Percent	na	
Columbia Forest Products Bw veneer	Commitment	All	All
	Actual	435	87
	Percent	na	
Longlac Wood Industries Po veneer	Commitment	50,000	10,000
	Actual	9,012	1,802
	Percent	18.0%	
Weyerhaeuser Po pulp	Commitment	500,000	100,000
	Actual	635,476	127,095
	Percent	127.1%	
Olav Haavaldsrud Timber Company SPF	Commitment	650,000	130,000
	Actual	1,045,469	209,094
	Percent	160.8%	

Actual harvest volume data for the 2006-07 term was not available at the time of writing this report. For analysis purposes, total and annualized committed and planned volumes for the 2006-11 term are summarized in Table 7.

Manuals

Nagagami Forest Management Ltd. conducted planning and reporting, and carried out surveys and assessments. The audit noted areas for improvement, as described in the associated recommendations and suggestions within this report.

As discussed in Section 3.4.2, the audit team noted a significant improvement in utilization when compared to the findings of the previous audit. Utilization was good at most audit stops, particularly for the main conifer species. The slight deviations noted may have been due in part to inconsistent utilization standards in forest management documents for the term. Section 3.3.7 includes a recommendation to clarify utilization standards in forest management documents. The audit team believes that this will improve utilization in the future.

Table 7. Total and Annualized Committed and Planned Volumes (m^3).

2006-2011		Total	Annualized
Columbia Wood Products Po veneer	Commitment	206,750	41,350
	Actual	182,375	36,475
	Percent		88.2%
Columbia Forest Products Bw veneer	Commitment	7,500	1,500
	Actual	3,316	663
	Percent		44.2%
Longlac Wood Industries Po pulp	Commitment	45,000	9,000
	Actual	35,459	7,092
	Percent		78.8%
Longlac Wood Industries Po veneer	Commitment	5,000	1,000
	Actual	10,001	2,000
	Percent		200.0%
Weyerhaeuser Po pulp	Commitment	500,000	100,000
	Actual	707,986	141,597
	Percent		141.6%
Olav Haavaldsrud Timber Company SPF*	Commitment	650,000	130,000
	Actual	650,000	130,000
	Percent		100.0%

* Volume from other business arrangements not shown here.

Natural Disturbances and Salvage

Salvage operations of a wildfire were conducted during the audit term. All planning requirements and contractual conditions were met for this project. The salvage area was viewed and the audit team noted that utilization was good and operations were effective at removing damaged timber and regenerating stands.

Forest Protection

There were no significant forest protection measures undertaken during the audit term.

Periodic Review of Licensee's Performance

An IFA was conducted in 2002 covering the five years April 1, 1997 to March 31, 2002. The final audit report was received July 2, 2003 and an audit Action Plan was completed and submitted at the end of January, 2004. The IFAPP required that an Action Plan be submitted within two months of receipt of the final audit report, unless otherwise directed by the Minister. Documentation viewed by the audit team did not mention a revised submission schedule and NFML and MNR staff interviewed did not recall a specific deadline being set.

Recommendation 25: NFML and MNR must meet the required deadline for submission of the audit action plan and document any revision to the submission date that is directed by the Minister.

The Action Plan was fully approved effective March 10, 2004 and an Interim Status Report was requested by Forest Management Branch to be submitted by March 10, 2005, with a Final Status Report due by March 10, 2006. Submission dates for the Interim Status Report and the Final Status Report were March 9, 2005 and March 30, 2006 respectively.

In the review of the 2002 IFA Action Plan, the audit team noted that the "date completed" was not included for several action items.

Recommendation 26: In the next IFA Action Plan, MNR and NFML must ensure that the "date completed" is included for all actions taken, and that evidence is maintained to document the completion of action items.

The 2002 IFA did not recommend extension of the term of the SFL based on its conclusion that five of the six audit recommendations from the 1997 IFA were either still outstanding or, in the view of the audit team, not completely fulfilled. The 2002 IFA audit team also cited inattentiveness by both Abitibi Consolidated (the SFL holder at the time) and MNR to meeting reporting and compliance monitoring requirements as significant issues.

The current audit team considers the 1997 audit recommendations, applicable to the current situation on the Nagagami Forest, adequately acted upon with the exception of Recommendation 5. A summary is provided in Table 8.

Table 8. Summary of Current Status of the 1997 Independent Forest Audit Recommendations.

Summary of 1997 IFA Recommendation	2002 Audit Team Comment	2005 Status Report Comment	2007 Audit Team Comments
Rec. 4 The company communicate information about its sustainable forest management systems.	Outstanding	Complete	Not Applicable The recommendation was directed at the SFL holder at the time (Abitibi-Consolidated); NFML is the current SFL holder and does not have a sustainable forest management system.
Rec. 5 Submit accurate annual reports by due date and report the area left for natural regeneration and FTG annually.	Outstanding	Complete	Partially Met Five of six ARs submitted on time; Errors in Year 10 AR; Natural regeneration not reported in all years; FTG reported annually.
Rec. 6 The company and MNR investigate ways of increasing the amount of merchantable fibre available to industry so that the level of cutting operations is at least 90%.	Outstanding	Complete	Met Utilization of the AHA was 87% during the audit term (higher than most SFLs in Ontario).
Rec. 2 The company recover productive area lost to slash piles; MNR facilitate approval of fire permits if slash is burned.	Not completely fulfilled	Complete	Met Obvious improvement in slash management during the 2002-07 period; slash was piled at all sites viewed and pile burning was generally effective; use of cut-to-length systems at several sites also reduced roadside slash by leaving unmerchantable material at the stump.
Rec. 3 The company ensure all culverts are installed and maintained to standards.	Not completely fulfilled	Complete	Met Improvements evident in water crossing installations.

Table 9 summarizes the current audit findings with respect to recommendations from the 2002 IFA that dealt with issues of meeting reporting and compliance monitoring requirements.

Table 9. Summary of Status of Selected Recommendations from the 2002 Independent Forest Audit.

2002 IFA Recommendation	Proposed Actions	2007 Audit Team Comments
Rec. 4 OMNR should retrieve and compile the Native Background Information Reports and the Report on the Protection of Native Values produced for the NF and forward copies to the appropriate First Nation.	1. The Resource Planner will work with the Area Forester in retrieving and compiling the Native Background Information Reports (NBIR) and the Report on the Protection of Native Values (RPNV) produced for the Nagagami Forest FMP 2001-2006 and forward copies to the appropriate native communities. 2. The Area Forester and Resource Planner will identify in the Terms of Reference the lead for First Nations consultation and associated record keeping for the 2006-2011 FMP. The lead will be responsible for meeting the requirements for native consultation as per FMPM (including appropriate distribution of reports).	Met NBIR available to community in September, 2004; RPNV available in May, 2005. FN representative on 2006-11 FMP planning team.
Rec. 14 The company should conduct compliance inspections of all water crossings newly installed during the 2003-04 operating year to ensure their proper installation and complete the required compliance reports in accordance with legislative requirements.	The Company shall conduct compliance inspections of all water crossings newly installed during the 2003-04 operating year to ensure their proper installation and complete the required compliance reports as per the legislative requirements. As often as possible, MNR will be present when the Company completes the initial inspections of these installations.	Met Compliance inspection reports completed for installations include detailed descriptions of culvert installations.
Rec. 15 The company should provide increased training to its staff and other contractors employed on the licence area, and should comply with the guidelines, to ensure that the required number, species, and size of snags, particularly in conifer stands, are being retained in cutovers.	1. The Company shall provide training to its staff and contractors to ensure that the snag management guidelines are understood. Compliance inspectors will be trained to ensure that they are aware of the requirements for snag management and required measurements of snag retention. Snag management requirements are clearly documented in the Forest Management Plan and will be documented in the Annual Compliance plan as a compliance priority. 2. Compliance monitoring will be carried out to confirm that training has been effective.	Met Training records show training delivered. Compliance inspection reports demonstrate an emphasis on ensuring snag requirements are met. Field audit verified conformity to guidelines.
Rec. 17 Abitibi and OMNR should conduct field training in best management practices in accordance with the Forest Management Guidelines for the Protection of the Physical Environment (Archibald et al. 1997) and develop operational, monitoring, and compliance strategies to address disturbance on sensitive sites.	Abitibi & MNR will conduct a workshop to upgrade the knowledge of the contractors and their employees in regard to the Guidelines for the Protection of the Physical Environment. The workshop will cover the following: (1) Best management practices (BMPs) for protecting sensitive sites (geared towards operators), and (2) monitoring and compliance of operations on sensitive sites (geared towards supervisors and inspectors). An output from the workshop will be compliance and monitoring strategies. This workshop will be developed in coordination with the regional specialist.	Met Training delivered Evidence of care taken in the field to minimize site disturbance. Monitoring for site disturbance evident from compliance report comments.
Rec. 23 Starting with the 2003-04 season, Abitibi should report, as required by the FMPM, natural renewal treatments annually in the year it occurs in the annual reports submitted for the NF. Backlog treatment areas should be reported separately, in accordance with the procedures outlined in the FMPM.	Abitibi shall report all natural regeneration treatments on an annual basis in the year that they occur beginning with the annual report for 2003-04. Backlog of natural regeneration areas shall be reported separately in 2004-05 annual report.	Partially Met Figure 17 suggests that full reporting of natural regeneration may not be occurring. No evidence that backlog areas were reported separately in the AR. See Recommendations 18 and 24.

Continued on next page.

Table 9 continued.

2002 IFA Recommendation	Proposed Actions	2007 Audit Team Comments
Rec. 24 Starting with the 2003-04 season, Abitibi should report the results of its FTG surveys annually, including backlog areas, in the annual reports submitted for the NF, without delay, as required by the FMPM.	1. Abitibi shall report FTG survey results, including backlog areas, on an annual basis in the year that they are carried out beginning in 2003-04. Abitibi will put procedures in place to ensure that information is reported annually as it is collected. 2. Starting in 2004, MNR Wawa District will complete FTG assessments on a random sample of those areas surveyed by the Company as a spot check and this will be built into the annual monitoring program through ACOPs for future AWSs.	Partially Met FTG survey results reported however surveys are not up-to-date. See Recommendations 18 and 24.
Rec. 26 Compliance monitoring and verification by Abitibi and the OMNR should be improved on the NF. Improvements should include: proper training of staff in compliance monitoring and reporting; adequate training of staff in the identification of instances of non-compliance, and inclusion of these identified instances in staff compliance reports; implementation of all follow up actions; regular meetings to discuss problems and to provide education and training opportunities for field staff to ensure compliance with all applicable legislation, regulations and guidelines; regular joint field inspections to foster good communications and to establish common operational expectations; assurance that all reporting procedures (including Table AR-12 in annual reports) are being followed and all requirements are being met.	1. Abitibi will send additional Company staff and contractors to the Forest Operations Compliance Course as spots become available. 2. The Company and MNR will meet regularly and conduct simultaneous inspections to establish the proper procedures and expectations for monitoring and reporting through FOCIS. 3. The advisory service of the provincial Forest Operations Compliance Program Coordinator is to be sought to assist the MNR in re-establishing (reconfirming) a local compliance program that meets provincial standards. 4. Wawa District Manager has created a new position and appointed an area supervisor to the Magpie/Nagagami area. A new area team has been set up to better manage the unit by showing a commitment to be on the unit regularly. 5. Formal meetings are to take place between the Company and MNR Wawa District to review the compliance plan in the late fall prior to the writing of the AWS (discuss past problems, establish compliance priorities, etc.) 6. Meetings between the MNR Wawa District and the Company will occur biannually to assess problems, report on progress and discuss any other issues related to compliance on the unit.	Met for the company. Partially met for MNR. NFML and MNR compliance inspection staff are certified compliance inspectors. NFML and MNR compliance reports are thorough. Review of compliance program conducted by Provincial compliance specialist. Significant underachievement of compliance inspections by MNR. See Recommendation 1.
Rec. 27 Abitibi and OMNR Wawa staff should exercise diligence in meeting the annual reporting submission dates and review deadlines in accordance with the FMPM requirements.	A production schedule has been developed to ensure that submissions to MNR are done in a timely manner and assigned deadlines are met (Annual Report Review and Preparation Protocol). MNR Wawa District will make it a priority to review those Annual Reports where it has failed to meet the timelines of the ARRPP without causing a delay to future Annual Report submissions.	Met Five of six ARs submitted and reviewed on time.
Rec. 28. The results of any audits undertaken on the NF should be summarized in the annual report prepared by Abitibi in the year that the audit is conducted.	The results of any audits required under the CFSA and undertaken on the Nagagami Forest shall be summarized in the annual report prepared by Abitibi in the year that the audit is conducted. The 2002 IFA will be summarized in the 2002/03 annual report.	Met Verified in the fall 2002-03 AR.

Continued on next page.

Table 9 continued.

2002 IFA Recommendation	Proposed Actions	2007 Audit Team Comments
Rec. 29 OMNR and the company should come to a mutual agreement regarding the required revisions to the 1992-97 RPFO by October 31, 2003. The company should complete the agreed-upon revisions and submit the revised report no later than February 29, 2004. The RPFO shall be revised to meet the applicable phase-in requirements of the FMPM.	1. The required alterations to the 1992-97 RPFO shall be done to meet the phase-in provisions of the FMPM. 2. MNR Wawa District will review the completed RPFO in a timely fashion not exceeding 30 calendar days.	Met Report submitted and reviewed.

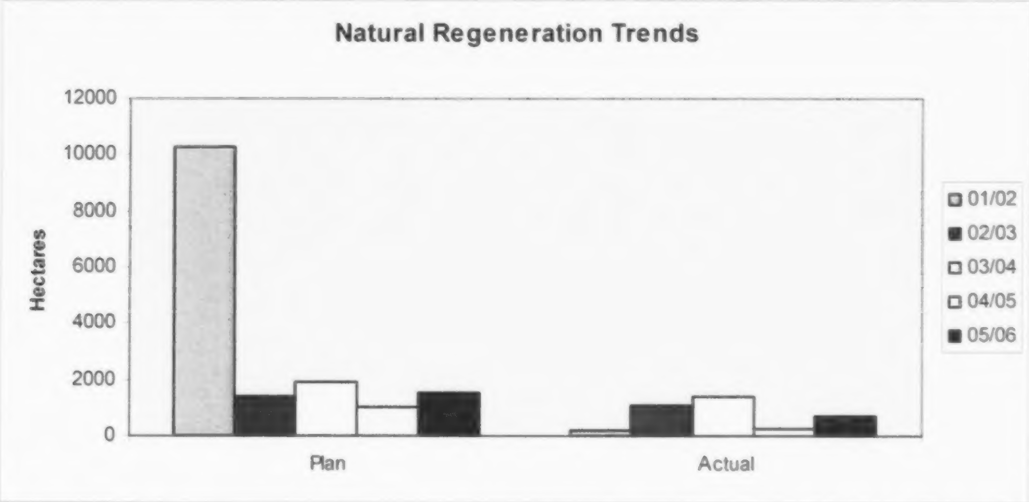

Figure 17. Natural regeneration trends for the Nagagami Forest during the 2001-06 FMP period.

The audit team found that the actions to address the balance of the 33 recommendations from the 2002 IFA were appropriately implemented and were effective in correcting the issues discovered during the audit, with some exceptions discussed below. Recommendations from the 2002 IFA are presented in italics.

Recommendation #5: The MNR should re-advise the Chief and Council of HFN of the requirements of Term & Condition 77 and initiate discussions t[illegible]hat end if there is community interest in doing so.

Condition 77 is now covered by Condition 34 of MNR's Class EA. MNR was unable to provide evidence that the Chief and Council of the Hornepayne Aboriginal Community were re-advised of Term and Condition 34 (see Recommendation 3); however, reports were prepared each year summarizing benefit sharing in terms of employment, wood allocation, and involvement in planning. In addition, discussions occurred at the start of the FMP development process and the Hornepayne Aboriginal Community assigned a representative to the planning team.

Recommendation #11: The MNR Wawa District Manager should ensure that copies of all amendments to the FMP are distributed to the locations and within the timelines as specified in the FMPM.

MNR created a master list of all amendments which is maintained at the District office; an updated copy is sent to the regional office and the FMB annually. The 2001 to 2006 amendment summary master list indicated that records of all amendments were sent to the Regional office and to FMB. However, FMB files were missing all amendments for the 2001-05 period. MNR District confirmed that in the past, copies of amendments were not forwarded to FMB, although they were sent to the Regional office. FMB received copies of all amendments for the 2006-11 FMP to date, which suggests that record distribution has improved recently; however, the summary of amendments was received by FMB in August of 2007 rather than by April 30th as required in the 2004 FMPM. Therefore,

Recommendation 27: MNR Wawa District must work with Corporate MNR to ensure that all missing copies of amendments to the 2001-06 FMP are provided to Forest Management Branch for their records.

Recommendation 28: MNR Wawa District must ensure that copies of all amendments are sent to Forest Management Branch according to the timelines specified in the FMPM.

Recommendation 18: Abitibi should take immediate steps to ensure that the unutilized timber currently piled at roadside is scaled for crown dues and marketed. The timber should be disposed of even if it is deemed unmarketable. Abitibi should develop strategies to prevent similar occurrences in the future.

Overall utilization was found to be acceptable, and an apparent improvement over that noted during the 2002 IFA. The audit team could not find reference to an action plan to deal with road-side piles in the 2006-07 AWS as indicated in the Action Plan.

Recommendation #30: MNR should take immediate steps to reconcile the stumpage accounts for the NF. Full reconciliation of the accounts should be completed by March 31, 2004.

The stumpage accounts were corrected and the SFL holder indicated that management of the accounts has greatly improved in the past several years. However, errors still occur in the system. Currently NFML is denoted as having a credit of $11,455.98, which should not exist. When raised in the draft audit report, MNR's Provincial Measurement Unit investigated this issue and determined that the credit resulted from Weyerhaeuser paying stumpage on an incorrect volume invoice for wood from the Nagagami Forest, and that the credit should be refunded to Weyerhaeuser rather than credited to NFML. Therefore,

Recommendation 29: The Financial Planning, Accounting and Control Section of MNR must take immediate steps to reconcile errors in the stumpage accounts for NFML and its shareholders.

Forest Renewal Trust

Forest renewal charges were paid and the minimum balance requirement of $2,181,300.00 on March 31 of all years was maintained. A regular review of the renewal rates was conducted, as required, the most recent for the 2006-07 fiscal year. NFML conducts the analysis and proposes any changes in renewal rates to Wawa MNR District who review the submission and provide formal approval of any proposed changes. For example, MNR approved changes in renewal rates proposed by NFML for 2006-07 intended to reduce a surplus in the Forest Renewal Trust (FRT) Account for the Nagagami Forest. Approval was granted on the understanding that renewal rates would have to increase in the following year to ensure that the minimum account balance is maintained. The renewal trust rates were adjusted twice during the audit term.

Monthly statements of FRT Account activity are provided to MNR and the SFL holder by the Trustee and a full financial audit (Specified Procedures Review) is conducted periodically by KPMG, the most recent being for 2005-06. The audit team examined a 23% sample of projects invoiced under the Forest Renewal Trust Account for the year 2005-06. The maps and associated records were consistent with the field work observed with the exception of a small portion of Block 225 (stop 21) that was mapped as planted in 2005-06 but it was not planted. The mapping error was several hectares in size.

Silvicultural Standards

The NFML is meeting its contractual obligations related to silvicultural standards and the treatments of Category 2 lands as described in the SFL. However, there are problems with silvicultural effectiveness monitoring as described in Section 3.6.1 and reporting of natural regeneration. These findings are similar to those reported in the 2002 IFA. The Company had attempted to correct these deficiencies by developing new survey methods and reporting systems but these measures are not yet sufficient (see Recommendations 18 and 19).

Herbicides

The SFL allows for amendments to silviculture standards should legislation limit the use of herbicides. There were no changes to legislation or registration of herbicides during the audit period.

Aboriginal Opportunities

NFML met the obligations of its SFL related to co-operating with MNR and Aboriginal communities. In addition, several members of the Hornepayne Aboriginal Community are employed at local mills and in forest operations (employment numbers for Constance Lake First Nation were not provided).

Compliance Planning and Monitoring

The monitoring section (Section 3.6.1) in this audit report contains a summary of the compliance monitoring program completed during the term. Compliance findings related to contractual obligations are summarized here.

The SFL holder completed the required compliance plans with only a minor discrepancy related to compliance reporting responsibility noted in the documents; a suggestion was made to correct this. The audit team determined that the number of compliance inspections completed by NFML during the audit term was appropriate and that a full compliment of operations was checked. The audit team also noticed marked improvement in content of NFML and MNR inspection reports through time and commends this effort.

A significant discrepancy in compliance reporting between NFML and MNR was noted for the audit term. Dual reporting, early term record-keeping issues and low MNR sample intensity in some years was noted as causing some of the discrepancy but differing inspection standards was also cited. A recommendation is made in Section 3.6.1 to address this issue.

Increased focus on compliance training and completing compliant operations was noted by the audit team. NFML completed annual, semi-annual and special training sessions (as needed) during the audit term that included contractors and MNR. In addition to compliance, NFML has an effective internal prevention/education program targeted at staff and contractors.

Distinguished as commendable was the extra effort taken to hire a provincial compliance expert in 2005 to complete an independent compliance review and the subsequent completion of an action plan for the recommendations and suggestions from the review report.

Forestry Operations on Mining Claims

There were no concerns regarding mining claims on the Nagagami Forest during the audit term.

4.0 Summary of Conclusions and Recommendations

The audit team concluded that, with the exceptions noted in the audit report, management of the Nagagami Forest was in compliance with legislation, regulations, and policies and was effective during the term of the audit. The Nagagami Forest was also managed in compliance with the terms of the SFL held by NFML. Forest sustainability, as it applies to the forest environment and portions of economic aspects, is being achieved as assessed through the IFAPP.

The audit team found that sustainability as it relates to the diverse aspect of meeting societal needs and expectations was not fully met. Of particular concern to the audit team was failure to resolve the long-standing issue of road access for local forest users. Partially addressed or unaddressed MNR policy positions and strategies, combined with a lack of funding for on-going road maintenance have contributed to the general impasse. The issue has spilled over into aspects of forest sustainability dealing with social benefits and their associated forest management objectives. Recommendations 6 and 23 address the access issue. Several suggestions were also provided. Other key recommendations identified by the audit team were Recommendation 1 (dealing with MNR compliance commitments), and Recommendations 18 and 24 regarding regeneration surveys and inventory updates.

A principal area of focus during the audit was on follow-up to the recommendations originating from the 2002 IFA. The audit team was generally satisfied with the progress achieved on the recommendations. A few recommendations directed principally at correcting administrative deficiencies require additional work and are noted in this report. Improvements in inventory updating and reporting of regeneration are ongoing concerns and are re-addressed by key recommendations arising from the current audit.

Table 10 provides a summary, by responsible party, of the number of Recommendations and Suggestions identified during the audit. A complete list is given in Table 11.

Table 10. Summary of Recommendations and Suggestions by Responsible Party.

	NFML	MNR	NFML and MNR	Total
Recommendation	9	13	8	30
Suggestion	7	8	2	17
Best Practice	1	0	0	1

Recommendation 30: Based on the outcome of this audit and performance with respect to its contractual obligations, the audit team recommends the Minister extend the term of the Nagagami Forest Management Inc. Sustainable Forest Licence.

Table 11. Summary of Recommendations and Suggestions.

Principle 1: Commitment

Recommendation:

1. MNR Wawa District must meet its compliance commitments on the Nagagami Forest, as developed and described in their annual compliance plans.

Principle 2: Public Participation

Recommendations:

2. The Nagagami Forest planning team must ensure that the 2011 FMP includes an up-to-date list of LCC members on the contributors' page.
3. MNR must ensure that all Aboriginal consultation efforts are properly documented and filed for future reference.
4. MNR must post notices in local Aboriginal media unless affected First Nation(s) have specifically agreed to another approach.
5. MNR must ensure that maps accompanying aerial spray notices sufficiently detail the location of planned operations.

Suggestions:

1. MNR should ensure that the LCC Report includes an up-to-date list of members prior to the Report's inclusion as supplementary documentation to the 2011 FMP.
2. MNR should make continued efforts to encourage the involvement of Constance Lake First Nation at all stages of development of the 2011 FMP, including notices and/or letters designed specifically for the First Nation, rather than general public notices.

Principle 3: Forest Management Planning

Recommendations:

6. MNR Wawa District, in cooperation with Corporate MNR and MNR Northeast Region, must take decisive action to resolve the access issue on the Nagagami Forest in a manner that fully supports MNR's higher-level policies, such as *Beyond 2000* (now *Our Sustainable Future*), as well as forest management objectives 3.4.2.2.2 and 3.4.2.2.3 as set in the 2001-06 and 2006-11 FMPs.
7. The Nagagami Forest planning team must ensure that the most current sources of direction are available and referenced correctly in FMP documentation.
8. NFML must ensure that the 2011 FMP is thoroughly reviewed for errors and contains all required text, including:
    a) geography, historic forest condition, and forest inventory updating procedures,
    b) discussion of variances between planned and forecast values provided in FMP tables (see Section 3.3.7),
    c) planned exceptions recorded at the beginning of the plan.
9. MNR must ensure that, for MAFA values, only information on confirmed MAFAs is recorded on the wildlife values map.
10. The Nagagami Forest planning team must ensure that, for future FMPs, the detailed ranking information for MAFAs is considered during planning.
11. NFML must clarify utilization standards in the 2006-11 FMP and ensure that this direction is consistent in all forest management documentation.
12. NFML must detail in the 2011 FMP a plan to treat all residual stems not otherwise needed for wildlife or silviculture objectives to ensure that the regeneration of new stands is not jeopardized.
13. NFML and MNR must ensure that information contained in the summary of audits in the Supplementary Documentation to the FMP is current and complete.
14. NFML must amend the 2006-11 FMP to include the modified harvest exception to the Silvicultural Guides implemented in Block 565.

Suggestions:

3. MNR and NFML should ensure that minutes provide an accurate reflection of planning team meetings.
4. Corporate MNR should consider adding a requirement that future planning team Terms of Reference include a statement regarding planning team members' responsibilities in relation to confidentiality of information.

Continued on next page.

Table 11 continued.

Principle 3: Forest Management Planning (continued)

Suggestions: (continued)

5. Wawa District MNR should consider maintaining one or more of the roads identified for transfer to MNR in the 2011 FMP that are of interest to local people and do not create conflicts with remote tourism.
6. Corporate MNR should provide guidance to planning teams that ensures the expected (estimated) term of use for all proposed new primary and branch roads is clearly documented and provided to the public.
7. MNR Wawa District should consider revising the District Tourism Strategy to reflect the spirit of negotiation contained in the tourism-forest industry Memorandum of Understanding and MNR's 2001 *Management Guidelines for Forestry and Resource-based Tourism.*
8. NFML should complete thorough roads planning for the 2011 FMP.
9. NFML should explain in the AWS text in a way that informs the public the rationale for requiring additional harvest area beyond the average annual area of harvest.

Principle 4: Plan Implementation

Recommendations:

15. NFML must ensure that Area of Concern and silviculture prescriptions are applied according to the forest management plan and/or annual work schedule.
16. NFML must ensure that appropriate measures are used to minimize pooling of water next to roads.

Suggestions:

10. NFML should implement methods to identify soils susceptible to compaction and minimize soil compaction on all sites.
11. NFML should expand its site preparation treatment regime to include additional methods to complement the existing program of winter blading.
12. MNR should conduct an evaluation of the costs, benefits and shared liabilities of reinstituting a prescribed burning program on the Nagagami Forest in advance of the approval of the next forest management plan.
13. NFML should evaluate and correct the root cause that led to the deficiencies associated with installation of the portable bridge in Block 802.

Principle 5: System Support Services

Suggestion:

14. NFML should ensure that all map products contain correctly coded features.

Best Practice:

1. The comprehensive training delivered through Abitibi-Consolidated for staff, contractors and shareholders on the Nagagami Forest.

Principle 6: Monitoring

Recommendations:

17. NFML and MNR must develop a common understanding and interpretation of compliance standards used during compliance inspections.
18. NFML must reanalyze the existing data from the FTG surveys and report on silvicultural effectiveness for each forest unit in the Year 10 AR.
19. Corporate MNR's review of the Silvicultural Effectiveness Monitoring Manual and the Silvicultural Effectiveness Monitoring project for Ontario must consider new developments such as the Enhanced Forest Resource Inventory program and an array of cost effective sampling methods that can be customized to local situations.
20. NFML must ensure that Annual Reports contain all required text including full descriptions of non-compliance during the year, reasons for occurrences and actions taken.
21. Corporate MNR must review how it requires reporting on silvicultural success in the FMPM (Table AR-14) to better reflect field conditions and support the assumptions used in forecasting future forest condition.
22. NFML, assisted by MNR, must update the Year 10 Annual Report for the 2001-06 FMP to ensure it meets all FMPM requirements, values in all tables are correct, and values in text and related tables are consistent.

Continued on next page.

Table 11 continued.

Principle 6: Monitoring (continued)

Suggestions:

15. NFML should clarify compliance roles in compliance planning documents.
16. MNR should annually review supplemental aerial photography as one component of a compliance monitoring plan.

Principle 7: Achievement of Management Objectives and Forest Sustainability

Recommendations:

23. Corporate MNR must:
    a) define the concept of traditional means of access, while considering the long-standing use of many forest access roads in Ontario,
    b) provide clear guidance on application of the concept in practice, while considering MNR's various commitments to Ontarians, and
    c) effectively communicate this information within MNR, and to Aboriginals, stakeholders and the interested public.
24. NFML must update the forest resource inventory to deal with areas that have been disturbed over the last thirty years .

Suggestions:

17. The 2011 Nagagami Forest planning team should recognize the specific concerns of individual interest groups when preparing responses to comments received from these groups.

Principle 8: Contractual Obligations

Recommendations:

25. NFML and MNR must meet the required deadline for submission of the audit action plan and document any revision to the submission date that is directed by the Minister.
26. In the next IFA Action Plan, MNR and NFML must ensure that the "date completed" is included for all actions taken, and that evidence is maintained to document the completion of action items.
27. MNR Wawa District must work with Corporate MNR to ensure that all missing copies of amendments to the 2001-06 FMP are provided to Forest Management Branch for their records.
28. MNR Wawa District must ensure that copies of all amendments are sent to Forest Management Branch according to the timelines specified in the FMPM.
29. The Financial Planning, Accounting and Control Section of MNR must take immediate steps to reconcile errors in the stumpage accounts for NFML and its shareholders.

Conclusions

Recommendation:

30. Based on the outcome of this audit and performance with respect to its contractual obligations, the audit team recommends the Minister extend the term of the Nagagami Forest Management Inc. Sustainable Forest Licence.

Appendix A
Comparison and Trend Analysis of Planned versus Actual Forest Operations Report

Ontario-East
Woodlands

Iroquois Falls Forest
Nighthawk Forest
Nagagami Forest

Nagagami Forest
SFL# 550047
Comparison and Trend Analysis of Planned vs. Actual Forest Operations Report

2007 Independent Forest Audit for the Period of April 1, 2002 through March 31, 2007

Independent Forest Audit of the Nagagami Forest

SFL# 550047

For the 2002 to 2007 Period

Comparison and Trend Analysis of Planned vs. Actual Forest Operations Report

I hereby certify that this report is complete and accurate, and has been prepared to the best of my professional skill and judgment, in accordance with the requirements of the *Forest Management Planning Manual* and the *Forest Information Manual* and the *Independent Forest Audit Process and Protocol (January 2007)*.

REGISTERED PROFESSIONAL FORESTER
1609
R. K. MACLEOD
ONTARIO

Robert MacLeod RPF
Robert K. MacLeod, R.P.F.

December 7, 2007
Date

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Introduction

This report has been prepared as part of the Independent Forest Audit (IFA) process following the guidance of the Independent Forest Audit Process and Protocol (January 2007) (IFAPP2007). The preparation of this comparison and trend analysis report is the joint effort of many individuals. The author acknowledges the contributions of these individuals. The MNR District office staff supply the volume utilization and the revenue information. Nagagami Forest Management (NFM) is the SFL holder employing Abitibi-Consolidated Ontario-East Woodlands to carry out the forest management requirements for the license. The Abitibi contributors include the GIS and Mapping department (Barb Duffin and Dwayne Schultz), and Forestry (Rita Rivard, Boris Michelussi, Jerry Smith, Jon Peroff and Rodney Reid). The purpose of the report is to provide an interpretation of the current state of the forest relative to its past state. The scope of the analysis is the managed crown land as defined by the Forest Management Planning Manual (FMPM). The information included in the report is related to the past and present condition if the forest, and does not make any predictions about the future state of the forest.

The period of the report is the five-year period April 1, 2002 through March 31, 2007 and bridges two Forest Management Plans (FMPs). This includes four years of the April 1, 2001 to March 31, 2006 FMP and one year of the April 1, 2006 to March 31, 2011 FMP. Information for the analysis is drawn from the Annual Reports, Annual Work Schedules, Reports of Past Forest Operations, and Forest Management Plans for the current period (2006-2011) and the past two periods (2001-2006 and 1997-2002).

The Nagagami Forest, licensed to Nagagami Forest Management is managed by Abitibi Consolidated Company of Canada under contract, out of their Ontario-East Woodlands office in Iroquois Falls and their branch office in Hornepayne (**Figure 1**). The Nagagami Forest falls within the Wawa Ontario Ministry of Natural Resources (OMNR) District and the OMNR Northeast Region.

The scope the comparison and trend analysis report will address is the following topics:

1) The extent of the past and present area under management (Table 1);
2) The definition of the past and present forest units used to describe the Nagagami Forest (Table 2);
3) The past and present planned and actual harvest volumes (Table 3);
4) The past and present planned and actual harvest areas (Table 4);
5) The extent of the past and present areas of managed productive forest (Table 5);
6) The past and present, planned and actual, renewal and maintenance areas (Table 6); and,
7) The amount of harvested area successfully regenerated (Table 7).

Where the tables refer to 'plan term' these are the 3 five-year terms of the actual FMPs (i.e. current FMP plus two preceding terms where the 'current' plan term is the one in effect on March 31 of the audit year).

Past Terms

1997 to 2017 FMP (covering the 1997 to 2002 five-year operating term)
The 1997 FMP was prepared by Abitibi-Consolidated (formerly Donohue Forest Products Inc.) using the 1986 Timber Management Plan Manual (TMPM) and the phase-in requirements of the 1996 FMPM. In addition, the objectives for the plan and many of the tables were prepared in accordance with the requirement of the FMPM, although this was not a legal requirement. A new FRI based on 1991 photography was used and the landbase was updated to reflect the April 1, 1997 conditions. A careful review of the FRI photography ensured that the typed data on the photos matched the mapped information. In addition, edge-matching of each Ontario Base Map (OBM) was completed to ensure that the information for each tile matched the information of the adjacent tile. Wood-supply calculations were done using the Strategic Forest Management Model (SFMM) developed by the Ministry of Natural Resources (OMNR). The 14 forest units defined for this plan were based on preliminary work being carried out by the OMNR to develop standard forest units. In addition to this the plan modelled the prescriptions developed for the remote-tourism industry in the Wawa District tourism strategy using three additional forest units spatially based on the tourism zones.

During the term of the plan legal action on some forests in the province caused the OMNR to re-evaluate the phase-in requirements for the 1997 FMPs. In the case of the NF it was considered prudent to move to the next planning period early and implement the full requirements of the FMPM one year ahead of schedule. For this reason the 1997 to 2002 FMP was reduced in length by a full year. Trends and comparisons of achievements outlined in the report are for a four-year period.

2001 to 2021 FMP (covering the 2001 to 2006 five year operating term)
The 2001 FMP was prepared according to the 1996 FMPM by Abitibi-Consolidated using the 1994 FRI based on 1991 photography with updated depletion information. The plan was prepared on an "enhanced" schedule, allowing implementation of the plan one year ahead of schedule. The wood supply analysis was completed using SFMM version 1.6 and the newly developed standard forest units, with some small enhancements to identify the areas of lower quality spruce and poplar. The plan complies fully with the Wawa District tourism strategy although the prescriptions were modelled differently than in the 1997 plan due to updates with SFMM. The newer version of the wood supply model allowed for volumes left unharvested after clear cutting. There was an unsuccessful attempt to bump the plan up to an environmental assessment (EA) by a group of tourist outfitters with operations on the license.

The 2001 FMP continues to follow the OMNR direction with respect to emulation of natural disturbances by using the development of a natural template for frequency and area of cut sizes. The development of larger cuts was required to move the forest towards the natural template. The natural disturbance emulation led to an issue resolution process, a Regional Director's review and was reviewed by the Minister of Environment through a "bump-up" request. The Minister of Environment ruled that the larger cuts were justified to meet the environmental objectives in the plan.

Current Term

2006 to 2026 FMP (covering the 2006 to 2011 five year operating term)
During the 2001 to 2006 FMP term, the Sustainable Forest License (SFL) for the Nagagami Forest was transferred from Abitibi-Consolidated to Nagagami Forest Management Inc. (NFM). The shareholders of NFM include the wood commitment holders on the Nagagami Forest (i.e. Columbia Forest Products, Weyerhaeuser Company Ltd., Longlac Wood Industries, and Olav Haavaldsrud Timber Company Ltd.). Under the terms of the SFL, NFM is responsible for implementing all aspects of forest management on the Nagagami Forest. The Nagagami Forest is located entirely within the OMNR Wawa District and OMNR Northeast Region **(Figure 1)**.

The 2006 FMP was prepared by Abitibi-Consolidated under contract to NFM. The plan uses the 1994 FRI, updated with current depletions and depletion estimates to reflect the projected condition of the forest as of March 31, 2006. The wood supply modelling was completed using SFMM 2.2 Build 117. Standard forest units were utilized with some small enhancements to identify the areas of lower quality spruce and poplar. The site class split used for this plan was changed from 2001 to be aligned with the Abitibi model. Site classes X and 1 were lumped into SB1 and PO1 and SC 2 and 3 became SB3 and PO3. Details of the analysis carried out to determine the wood supply for the forest including the tools used are documented in the Appendix 10 analysis package for the 2006 FMP.

The Forest Management Plan complies fully with the Wawa District tourism strategy and the MNR's Crown Land Use Policy Atlas, but this time around the strategy was not modelled. The landbase actually impacted by conditions within the tourism zones is a very small percentage of the landbase (i.e. 2,441 out of 383,274 hectares or 0.63%). In the overall area of the forest and the timeframes being investigated the impact due to the strategy was negligible.

The FMP lead to an environmental assessment request by a group of 6 tourist outfitters and the North Algoma Wilderness Outfitters (NAWO). An "Area of Contention" map was developed to identify where the outfitters had concerns with new harvest and new road construction. Concurrence was obtained to allow completion of processing and hauling operations where harvest had already started. New harvesting and road construction operations were permitted outside of the areas of contention and renewal operations were allowed wherever they were required on the forest. The requests were eventually denied by the Ministry of Environment. It should be noted that cooperation between the parties involved was good in achieving concurrence and allowing operations to continue.

The Nagagami Forest Local Citizen's Committee (NFLCC) carries out the duties of the Local Citizens Committee (LCC) for planning on the Nagagami Forest. A review of the minutes of the NFLCC meetings indicates active participation and willingness to deal with the issues at hand. The participation and enthusiasm of the committee members has been refreshing and their input was crucial to the development of the plan. The LCC report provided by the NFCMC is available in Section 1 of the 2006 FMP. The NFLCC also decided to include a statement and a list of items of concern. This is also available in Section 1 of the 2006 FMP.

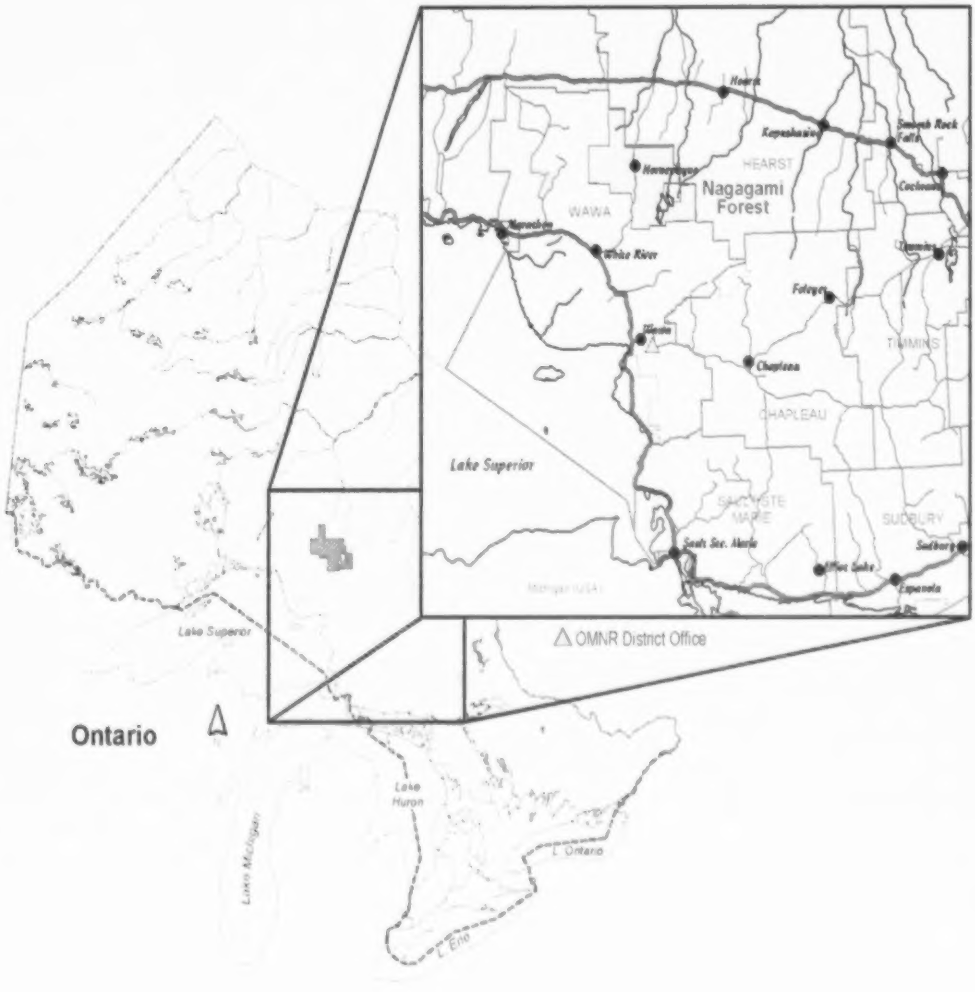

Hearst
Kapuskasing
Smooth Rock Falls
Hornepayne
HEARST
Nagagami Forest
Cochrane
WAWA
Marathon
White River
Timmins
Foleyet
Wawa
Chapleau
TIMMINS
CHAPLEAU
Lake Superior
SAULT STE MARIE
SUDBURY
Sault Ste. Marie
Sudbury
Elliot Lake
Espanola
Michigan (USA)
OMNR District Office
Lake Superior
Ontario
N
Lake Huron
Lake Michigan
L. Ontario
L. Erie

Figure 1: Management Unit Map of the Nagagami Forest.

The 2006 FMP was the first plan on the Nagagami Forest to completely adopt the Natural Disturbance Emulation Guidelines (NDPEG). Forest Management plan objectives have been established to meet the intent of the guidelines at the stand and landscape level. Residual forest remaining following the harvest is assigned targets in the plan at the single tree level, stand level and landscape level. Towards the end of the 2001 FMP operators were beginning to experiment with the levels of residual required under the implementation of the Natural Disturbance Emulation Guide.

Summary and Evaluation of Operations

Table 1: Summary and Evaluation of Operations identifies the changes to the landbase that have occurred over the past two forest management planning terms and the current state of the forest. The table uses the twelve working group categories in order to maintain continuity over the long term. The area numbers are for Managed Crown land only. No parks or patented land are included. The area figures for all three terms are based on the 1994 inventory. The source of this information is tables FMP-1 and 2 from the 1997, 2001 and 2006 FMPs.

The landbase in 2006 includes a productive area of 380,703 hectares which compares to the area 379,552 hectares identified in 1997. This indicates a small (0.3%) increase in the productive forest area over the period. Further investigation indicates that although the overall difference in productive forest is quite small there is a large amount of variation between the periods within the individual categories of forest. The largest shift in area is an increase of 54, 349 hectares in depleted area from the 1997 total. This is caused by improved mapping and inventory updates of harvest and natural depletions over the past ten years. The areas going into depleted are coming out of the working group areas; predominantly spruce 24, 883 hectares and poplar 24,579 hectares. Area from the jack pine working group contributes 3, 092 hectares and from the birch working group 1,799 hectares. The balsam fir working group has increased 4,668 hectares as a result of regeneration assessments as well larch has increased 72 hectares and a re-classification out of the jack pine forest unit into the red pine forest unit shows an increase of 6 hectares. Overall the amount of barren and scattered area (B&S) has decreased 3,531 hectares due to regeneration assessments and updates and the amount of protection forest has increased 320 hectares.

Trends

- The overall amount of productive area has changed very little over the three periods of the analysis;
- The amount of depleted area has increased;
- The amount of spruce and poplar and to a lesser extent jack pine working group has decreased;
- The amount of balsam fir working group has increased;
- The amount of B&S has decreased.

Forest Units

The Forest Resource Inventory (FRI) describes the Nagagami Forest in terms of manageable units called *forest stands*. A *forest stand* is a community of trees possessing sufficient uniformity in characteristics to be distinguishable from an adjacent stand. An aggregate of stands having the same predominant species is called a *working group*. For the Nagagami Forest, the predominant *working groups* are black spruce, balsam fir, jack pine, trembling aspen and white birch. Minor working groups include white spruce, larch, cedar, and balsam poplar.

Forest Units (FU) are aggregations of forest stands, which normally have similar species compositions, develop in a similar manner (both naturally and in response to silviculture treatments), and are managed under the same silviculture system. Forest units are developed to address the specific needs of the management unit and are derived from a combination of factors and considerations, including the local knowledge of individuals, the silvicultural guidelines, the forest ecosystem classification and the habitat matrix analysis. Forest units provide a foundation for silvicultural ground rules; yield curves, analysis of management alternatives, tracking sustainability and selection of operations. They apply to the entire 'productive' forest.

In the 1997 to 2002 Forest Management Plan, there were fourteen forest units identified for the Nagagami Forest. The fourteen forest units are similar to the 2006 - 2011 forest units as they are both based primarily on species composition and site class. The 1997 - 2002 forest units also had three forest units specific to the tourism zone.

In the 2001 to 2006 FMP, forest units were defined in a manner, to allow a filtering out of stands which contain pure species as well as improved identification of mixedwood stands and lowland stands. This provides an opportunity for more precise Silvicultural Ground Rules. Twelve forest units were developed.

1997-2002 FMP Forest Units
The 1997-2002 FMP utilized a total of fourteen forest units based primarily on species composition, site class, and their location within or outside of the tourism zones.

The 1997-2002 forest units are identified below in the order of sort priority:

1. **Other Conifer (OCO)** - Larch and Cedar > 60% of the stand composition.

2. **Site Class 3 Spruce (SP3)** - Black spruce or white spruce working group; site class

3. **Low Ground Spruce (SPLOW)** - Black spruce and white spruce >60% of stand composition and the entire stand is made up of any combination of Sb, Ce, La and Bf, or Sb greater than 70% and La, Ce, or Bf are present in the stand.

4. **Upland Spruce (SP0)** - Black spruce and white spruce > 60% of the stand; SPLOW stands previously extracted.

5. **Pure Poplar Site Class 3 (PPO3)** - Poplar > 60% of the stand; site class 3.

6. **Pure Poplar (PPO1)** - Poplar > 60% of the stand; site class X, 1, or 2.

7. **Mixed Hardwood (MH)** - White birch and poplar > 60% of the stand.

8. **Pure Jack Pine (PPJ)** - Jack pine greater than 60% of the stand.

9. **Balsam Mixed Wood (BAMIX)** - Remaining stands where Bf > 30% of the stand.

10. **Mixed Wood (MIXED)** - Remaining stands where Poplar and White Birch > 30% of

the stand.

11. **Mixed Conifer (MC)** - Black Spruce, White Spruce, Jackpine and Balsam Fir > 60% of the stand. Stands with Sb, Ce, La, and Bf greater than 70% resort to SpLow.

12. **Tourism Zone Hardwood (TZHwd)** - a combination of any MH, PPO1, or PPO3 stands that occur in the 500 to 1000 metre zone of a designated remote lake, that are visible from the lake.

13. **Tourism Zone Mixedwood (TZMix)** - a combination of any Mxwd, or Bamix stands that occur in the 500 to 1000 metre zone of a designated remote lake, that are visible from the lake.

14. **Tourism Zone Softwood (TZSwd)** - a combination of any Sp0, Ppj, or MC stands that occur in the 500 to 1000 metre zone of a designated remote lake, that are visible from the lake

All stands are selected in order except for the tourism forest units, which are location dependent. The tourism forest units were selected in a later process using the GIS to locate the appropriate forest units in the 500 to 1000-metre zone, and then estimating the amount of area that would be visible.

2001-2006 FMP Forest Units

The specific objectives for the Nagagami Forest required that forest stands be grouped into "forest units" which were different than the Forest Resource Inventory "working groups" and also different from the past plan forest units. The refinement of the previous plan's forest units into the 2001 to 2006 plan was necessitated by the need to incorporate the Northeast Region Forest Ecosystem Classification (NEFEC). The 2001 forest units listed below generally followed the Northeast Region Standard Forest Units.

1) SB1 – Black Spruce Pure Lowland Site Class X, 1, and 2;
2) SB3 – Black Spruce Pure Lowland Site Class 3, and 4;
3) PJ1 – Jack Pine Pure All Site Classes;
4) LC1 – Lowland Other Conifer All Site Classes;
5) PJ2 – Pine and Spruce Mixedwood;
6) SP1 – Spruce Pine Mixedwood;
7) SF1 – Spruce Fir Mixedwood;
8) PO1 – Poplar Pure Site Class X, 1 and 2;
9) PO3 – Poplar Pure Site Class 3 and 4;
10) BW1 – White Birch Poplar Mixedwood;
11) MW1 – Jack Pine Mixedwood; and,
12) MW2 – Spruce Fir Mixedwood.

2006-2011 Forest Units

The 2001 and the 2006 forest units are very similar. The Northeast Region Standard Forest Units serve as the template used in the development of the new forest units for the Nagagami Forest. The 2006 forest units include BOG and PR1 that were previously amalgamated into the SB3 and PJ2 forest units in the 2001 FMP. In addition the 2006 forest units provide a slightly different site class breakdown for the SB1 and SB3, and PO1 and PO3 forest units. The SB1 and PO1 were refined to only include site class X and 1, as the site class 2 is now included in the SB3 and PO3 forest units. This should allow for better upland and lowland site type separation and to help distinguish the sawlog and veneer products.

Species composition and site class was the primary sort criteria used to produce the fourteen new forest units for the 2006 plan. The new Forest Resource Inventory for the Nagagami Forest includes estimated primary and secondary site types according to the NEFEC. Since the site type estimates were not considered accurate they were not utilized for the new forest units.

The updated FRI inventory for the Nagagami Forest was aggregated into fourteen new forest units (which have similar species composition, stand development, sites, economic potential, forest products and silvicultural requirements) as follows:

1) BOG – Black Spruce BOG
2) PR1 – Red Pine
3) SB1 – Lowland to Intermediate Black Spruce Pure Site Class X and 1;
4) SB3 – Lowland Black Spruce Pure Site Class 2 and 3;
5) PJ1 – Jack Pine Pure All Site Classes;
6) LC1 – Lowland Conifer All Site Classes;
7) PJ2 – Pine Spruce Mixedwood;
8) SP1 – Spruce Pine Mixedwood;
9) SF1 – Spruce Fir Mixedwood;
10) PO1 – Poplar Pure Site Class X and 1;
11) PO3 – Poplar Pure Site Class 2, 3 and 4;
12) BW1 – White Birch Poplar Mixedwood;
13) MW1 – Jack Pine Mixedwood; and,
14) MW2 – Spruce Fir Mixedwood.

The forest unit sorts were applied to all stands regardless of ownership or land class. The following variances from the Northeast Region Standard Forest Units for Boreal Forests were adopted to better reflect conditions on the Nagagami Forest:

1) The black spruce lowland forest unit (SFU=SB1) was sub-divided into two forest units the SB1 and SB3 based on site class. The SB1 forest unit was more productive as it included site classes X and 1. The SB3 forest unit being the less productive including site classes 2 and 3 (site class 4 lowland spruce sites classed into the BOG forest unit). The BOG forest unit is a standard forest unit that was not utilized in the past plan as

the BOG area was previously included in the SB3 forest unit as reserved protection forest.

An additional sort criterion was added to the syntax to remove lowland black spruce dominated stands from the Lowland Conifer (LC1) forest unit and include them in the SB1 and SB3 forest units. The syntax added was: "*sb>=0.6 and sb+ce+la>=0.8*". This was also utilized in the 2001 FMP.

2) The LC1 standard forest unit syntax was refined by adding stands with 60% or more cedar and larch by adding the following syntax: "*or ce+la>=0.6*".

The net effect of changes 1) and 2) was the inclusion of only the cedar and larch dominated stands in the LC1 forest unit and the inclusion of all of the black spruce dominated stands in the SB1 or SB3 forest unit.

3) The PO1 standard forest unit syntax was sub-divided into two forest units the PO1 and PO3 similar to the SB1 and SB3. The PO1 forest unit was more productive as it included site classes X and 1. The PO3 forest unit was less productive as it included site classes 2, 3 and 4. The revised PO1 forest units were expected to allow for better aspen poplar and aspen poplar veneer forecasts, as most of the productive poplar sites were included. The PO3 forest unit was expected to represent the majority of off site poplar where the balsam poplar proportion was much higher.

For the 2001 FMP the SP1, MW1, and BW1 standard forest unit syntax were refined slightly by adding the following syntax: "*and po+pj<=.6*" to SP1, "*and po+pj>=.6* to MW1, and, "*and po<.4*" to BW1. The 2006 forest units did not utilize this adjustment to the SFU syntax in order to follow the standard forest units. The Nagagami Forest did not have any stands, which could be classified into the standard forest units of Lowland Hardwood (LH1), Tolerant Hardwood (TH1), White and Red Pine (PRW), and White Pine (PW1), so these standard forest units were not used.

The forest units for each period are outlined in Table 2: Description of Forest Units. The forest type, main working group, associated site types; habitat unit, silvicultural system, FRI parameters and criteria, sort order, average species composition, average stocking, and average site class for each forest unit are also provided.

Trends

- Forest units have become standard across the province in order to allow for provincial "roll-up" and some enhancements have been incorporated to capture local conditions.

Summary of Planned and Actual Volumes

The sources of information for planned harvest volumes for Table 3 Summary of Planned & Actual Harvest Volumes are 2006 FMPM Table FMP-21 for the 1997 FMP, the 2001 FMP and the 2006 FMP. The sources for the actual volumes are 1996 FMPM RPFO-4 for the 1997 FMP, and 2004 FMPM AR-4 for the 2001 FMP.

The social and economic objective for the 1997 FMP pertaining to the harvest of wood is: "A continuous annually and seasonally regulated supply of economical timber resources for the forestry companies." As well, the objective in the 2001 FMP is: "to provide a continuous and predictable sustainable supply of wood to the user mills dependent on the Nagagami Forest according to the wood supply targets, while meeting forest diversity objectives.

Figure 2 represents the trend in total planned and actual volume utilization over the 3 terms of the analysis. The planned volume has consistently been greater than the actual harvest in the two terms where comparable figures are available. The actual volume harvested was 84% of the planned in the 1997 term and 81% of the planned in the 2001 term. The trend according to the figures is towards higher utilization of the planned harvest with a noticeable decline in the planned volume in the final term. However, recent mill closures, shuts and fires point to an overall decline in utilization of the planned volume.

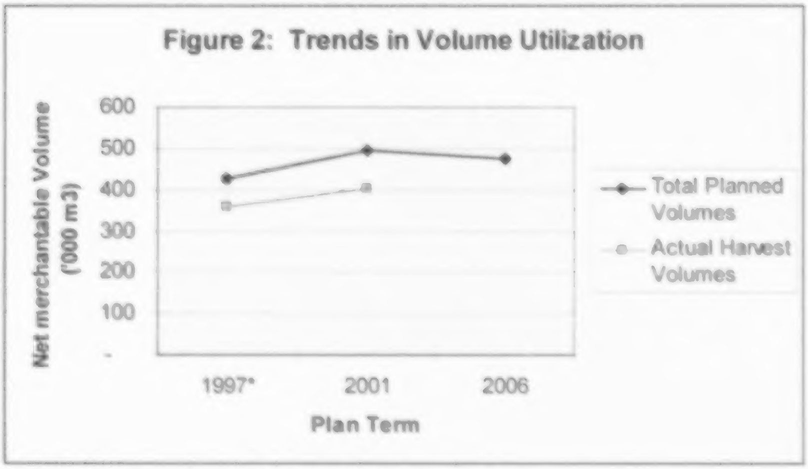


Figure 2. Trends in Volume Utilization.

The greatest increase in utilization has been apparent in the poplar volumes utilized from the forest. This is mainly due to the aspen fibre used by the Weyerhaeuser OSB mill who processed 50, 675 m^3 in 1997 compared to 137,803 m^3 in 2005 from the Nagagami Forest. Poplar utilization has increased 42%, whereas spruce utilization has declined 6% and jack pine utilization has remained stable. Weyerhaeuser has recently reduced their mill operations from 7 days per week down to 5 days per week. This will most likely have an impact on the utilization of the poplar.

Markets for available planned volumes have been sought throughout the term of the analysis. The 2005/06 annual report documents wood utilization from the Nagagami Forest during the term of the 2001 FMP at 10 different sawmills, 3 different pulp/paper mills, 4 different veneer mills, 5 different composite wood mills, many different fuelwood users and for road construction brush mat. The down-turn in the economic environment for the forest industry in general and in particular processing plants in

Northern Ontario and Quebec make it difficult to market the wood that is available to harvest.

In conclusion, the FMP objectives as stated have been achieved in that the supply of wood for the processing facilities is available to be utilized and indeed actively marketed to processing facilities. Current market conditions are not reflected in the analysis of the 1997 and 2001 FMP terms.

Trends

- Wood utilization has consistently been lower than available harvest volume over the term of the trend analysis;
- The utilization trend is increasing, mainly due to the increased use of poplar volume by the Weyerhaeuser OSB mill;
- Current market conditions are not reflected in the trend analysis.

Summary of Planned and Actual Depletion Area

Table 4 Summary of Planned and Actual Depletion Area has been compiled from the relevant FMPs and RPFOs for the Nagagami Forest. The harvest scheduling for the term of the analysis has been based on the results of the wood supply modelling done for the FMPs using the Strategic Forest Management Model (SFMM). The allowable harvest area (AHA) is determined for each forest class using SFMM. The planned harvest needs to be as close as possible to the AHA by forest class. This becomes the projected harvest area and is modelled using SFMM to ensure that it meets the sustainability requirements of the CFSA. Once approved in the FMP it then becomes the forecast harvest, which is compared in the annual reports against the actual depletion records.

Figure 3 provides a five-year summary of all forest units and the total, comparing available harvest area to the actual harvest achievement and presents it in a percentage of achievement. The figure also includes the five-year summary of salvage operations. For the detail on actual harvest achievements against forecast harvest by forest class it is necessary to go to the annual reports for the term in question.

BW1 Forest Unit

The forecast harvest area for BW1 was 365 hectares and the actual harvest was 352 hectares. The actual BW1 harvest area for the five-years was 96% of the available harvest area. Therefore, the BW1 forest unit was under-utilized by 4% during the 2001-06 term. The majority of the unharvested BW1 occurred in Block 473 where it was by-passed due to terrain.

Forest Unit	AHA	Harvest	% of AHA	Salvage
BW1	365	352	96%	55
LC1	845	403	48%	37
MW1	1,695	1,510	89%	21
MW2	2,155	1,926	89%	256
PJ1	1,155	1,070	93%	0
PJ2	1,310	1,164	89%	98
PO1	3,910	3,651	93%	343
PO3	1,595	1,408	88%	0
SB1	2,315	1,959	85%	455
SB3	970	645	66%	31
SF1	855	747	87%	67
SP1	1,245	1,099	88%	67
Total	18,415	15,934	87%	1,430

Figure 3: Summary of Actual Depletion - Nagagami 2001 - 2006

LC1 Forest Unit

The AHA was 845 hectares and the actual harvest was 403 hectares. The actual LC1 harvest area was 48% of the available harvest area. Therefore, the LC1 forest unit was under-utilized by 52% during the 2001-06 term.

The markets for species and materials available in the LC1 forest unit were very weak during this period with virtually no market for any size of cedar or larch. The pulp-sized spruce market was filled using the tops and smaller sized trees in the other forest units. In the future, when markets for the products found on the LC1 forest unit develop, these areas will be available to harvest. For the most part this forest unit was not accessed in the FMP to prevent accumulation of unmarketable materials. Harvest operators were instructed by NFM not to access blocks with a large composition of unmarketable material present. A large area of LC1 was left unharvested in Block 332 (158 hectares (19%)).

MW1 Forest Unit

The Available Harvest Area (AHA) was 1,695 hectares and the actual harvest was 1,510 hectares. The actual MW1 harvest area was 89% of the available harvest area. Therefore, the MW1 forest unit was under-utilized by 11% during the 2001-06 term. Areas of MW1 were bypassed in blocks 589 and 557 due to terrain.

MW2 Forest Unit

The Available Harvest Area (AHA) was 2,155 hectares and the actual harvest was 1,926 hectares. The actual MW2 harvest area was 89% of the available harvest area. Therefore, the MW2 forest unit was under-utilized by 11% during the 2001-06 term. Some areas of MW2 were bypassed in blocks 559 and 589 due to terrain.

PJ1 Forest Unit

The Available Harvest Area (AHA) was 1,155 hectares and the actual harvest was 1,070 hectares. The actual PJ1 harvest area was 93% of the available harvest area. The PJ1 forest unit was under-utilized by 7% during the 2001-06 term. This is not considered significant. Some bypass due to rough terrain occurred in blocks 7, 12, 132, and 139.

PJ2 Forest Unit

The Available Harvest Area (AHA) was 1,310 hectares and the actual harvest was 1,164 hectares. The actual PJ2 harvest area was 89% of the available harvest area. Therefore, the PJ2 forest unit was under-utilized by 11% during the 2001-06 term. Areas of bypass were spread across many blocks, including 223, 139, 563, and 549.

PO1 Forest Unit

The Available Harvest Area (AHA) was 3,910 hectares and the actual harvest was 3,651 hectares. The actual PO1 harvest area was 93% of the available harvest area. Therefore, the PO1 forest unit was under-utilized by 7% during the 2001- 06 term. This is not considered significant. Bypass due to rough terrain occurred in small amounts through many of the blocks where PO1 was present. An LUP reserve in Block 545 covered more ground than anticipated in the FMP causing a reduction in utilization in that block.

PO3 Forest Unit

The Available Harvest Area (AHA) was 1,595 hectares and the actual harvest was 1,408 hectares. The actual PO3 harvest area was 88% of the available harvest area. Therefore, the PO3 forest unit was under-utilized by 12% during the 2001-06 term. Small areas of bypass due to rough terrain have occurred in blocks 589, 557, 591, 596, and 518.

SB1 Forest Unit

The Available Harvest Area (AHA) was 2,315 hectares and the actual harvest was 1,959 hectares. The actual SB1 harvest area was 85% of the available harvest area. Therefore, the SB1 forest unit was under-utilized by 15% during the 2001-06 term. As indicated by the lower percentage of utilization there were substantial areas of bypass of SB1 due to small, unmarketable material and terrain in the following blocks; 538, 518, 534, 418, 569, 570, 588, and 587.

SB3 Forest Unit

The Available Harvest Area (AHA) was 970 hectares, the planned harvest area was 970 hectares, and the actual harvest was 645 hectares. The actual SB3 harvest area was 66% of the available harvest area. Therefore, the SB3 forest unit was under-utilized by 34% during the 2001-06 term. This is considered significant and is due to very weak pulp markets and very little demand for smaller material. Areas of high concentrations of small trees are left unharvested to prevent the accumulation of unmarketable material. Substantial areas of bypass occur wherever SB3 is found in the FMP due to small unmarketable wood, and terrain

SF1 Forest Unit

The Available Harvest Area (AHA) was 855 hectares, the planned harvest area was 855 hectares, and the actual harvest was 747 hectares. The actual SF1 harvest area was 87% of the available harvest area. Therefore, the SF1 forest unit was under-utilized by 13% during the 2001-06 term. By pass of SF1 due to rough terrain occurs in blocks 223, 557,558, and 548.

SP1 Forest Unit
The Available Harvest Area (AHA) was 1,245 hectares, the planned harvest area was 1,245 hectares, and the actual harvest was 1,099 hectares. The actual SP1 harvest area was only 89% of the available harvest area. Therefore, the SP1 forest unit was under-utilized by 11% during the 2001-06 term. Bypass occurred in small amounts throughout the FMP due to rough terrain.

All Forest Units
The "to-date" total harvest during the 2001-2006 term was 15,933 hectares. This represents 87% of the allowable harvest area (AHA) after 5 years of the plan meaning that 13% of the area planned for harvest was left unharvested. Reasons for the area remaining unharvested range from bypass due to rough terrain, high concentrations of small unmarketable wood, or areas reserved from harvest to protect previously unidentified areas of concern. Harvesting shortfalls during the 2001-06 period can also be attributed to extremely challenging market conditions created by the softwood lumber duties, low commodity prices, high wood costs, and the high priced Canadian dollar.

Natural Disturbances
The MNR has provided the gross natural disturbance area for the Nagagami Forest. The Wawa 021 fire occurred completely within the Nagagami Forest during the month of June 2003. The gross area of the fire was in excess of 6,000 hectares as provided by the MNR. The actual net disturbance area of productive forest burnt or damaged by the fire amounted to 3,910 hectares. The estimated volumes lost to fire was estimated based on the yield curves and volume estimates determined in the 2001 Forest Management Plan and calculated for modelling using SFMMTool. The fire impacted on several blocks planned for harvest with in the FMP, including 544, 361 and 339, and contingency blocks 542, and 340. Blocks 339 and 544 were harvested as part of the regular AWS harvest and therefore the impact of the AHA for the FMP was minimal. Of the burned area 1,430 hectares were salvage harvested for sawlogs, pulp and veneer. A substantial amount of harvesting completed within blocks 544 and 361, but the wood was not hauled. This wood was piled at roadside and lost in the fire.

An area of 878 hectares burnt within the fire was recent plantations and provided no volume or funds to the Renewal Trust Fund to cover regeneration costs. An application was successfully submitted to the Forestry Futures Trust fund to regenerate this area. The application covered a three-year period for site preparation, seedling production and planting.

Summary of Managed Productive Forest by Forest Unit
Table 5 provides a summary of the available managed productive forest during the current 2006 FMP and the past 1997 and 2001 FMPs. The source of the information for this table is FMP-9 from each of the respective FMPs.

The 1997 FMP has the following objective: 'a productive forest, growing in a manner similar to the natural forest with areas of high, moderate and low productivity'. The 2001 FMP has the following objective: 'maintain or increase the productive forest area of the

Nagagami Forest'. Finally, the 2006 FMP has the following objective: 'Minimize the loss of productive forest area to roads and landings'.

The total overall available productive area fell between the 1997 and the 2001 term (Figure 4) due to an exercise undertaken to make this classification more realistic. During the 1997 term, areas in peninsulas or inaccessible due to areas of concern were re-categorized into reserve and placed into the unavailable category so that they would not contribute the available productive area and skew the wood supply modelling results.

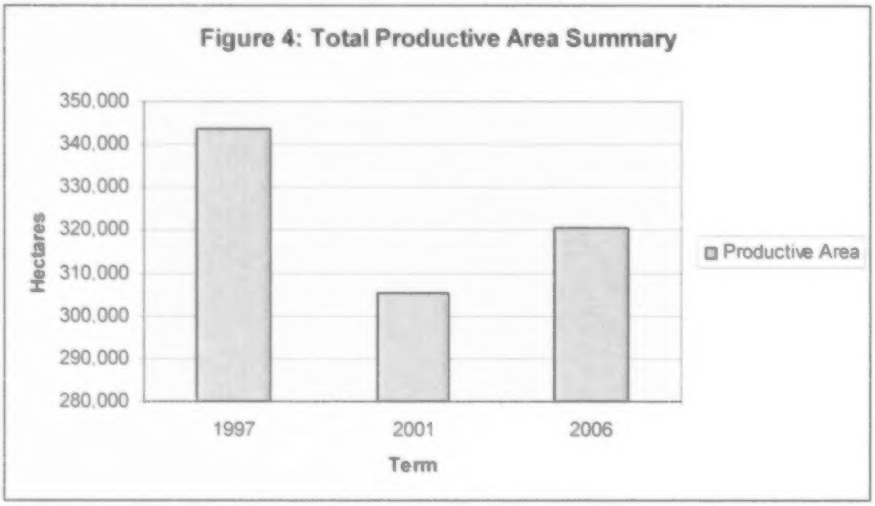


Figure 4: Total Productive Area Summary.

This adjustment brought the amount of available productive area from a high of 343,546 hectares down to 305,153. Following the 2001 term the available productive area rebounded and increased to 320,487 hectares. This increase was due to the implementation of the free to grow surveys and re-classification of forest areas into the productive forest class.

Comparison between forest units over several plan periods is difficult due to the changes in forest unit classification that have occurred over the different terms. Since the 2001 FMP, the standard forest units have been used, but prior to this the classifications are not directly comparable. Figure 5 provides a comparison of conversions by forest tree species over the course of the analysis. The species compositions have been relatively stable over the course of the analysis. There has been a small 1% increase in Jack Pine composition and a comparable decrease in Spruce composition. This is consistent with the current wood supply model results for the 2006 FMP which shows a gradual increase in the PJ1 forest unit and a gradual decrease in the SB1 and SB3 forest units over the planning term.

Figure 5: Forest Unit Trends by Term

	1997	2001	2006
Spruce	45%	45%	44%
Balsam Fir	4%	4%	6%
Jack Pine	11%	12%	12%
White Birch	4%	4%	4%
Poplar	32%	31%	30%
Cedar	2%	2%	2%
Larch	1%	2%	2%
Total	100%	100%	100%

Figure 5 indicates an increase in the composition of balsam fir on the forest. This is due to a combination of the age of the forest and the cessation of prescribed burning as a silvicultural tool. As older conifer stands begin to break-up from old age the understory is quite often replaced with balsam fir in the openings. For this reason the latest forest inventory indicates a higher percentage of balsam fir. After harvest, many of the older stands which are low stocking to begin with do not get disturbed very much by the harvest and regenerate naturally to high components of balsam fir. One tool that is used silviculturally to discourage the regeneration of balsam fir and prepare the site for planting spruce and pine is prescribed burning. Other than slash pile burning, there has not been a prescribed burn carried out on the Nagagami Forest since the early nineties. Another somewhat less effective method for treating these sites is to site prepare them using bulldozers to align the slash and remove the majority of the understory and LFH layer. This work must be completed during the frozen season to prevent the blade from digging too deep and completely removing the nutrients from the site. Balsam fir will remain as a component of the future stand in the windrows between the blade strips.

There is a decrease in Poplar on the forest apparent from Figure 5. This is also consistent with the wood supply model for the 2006 FMP. With the introduction of the Mixedwood Silvicultural Guidelines in the 2006 FMP the plan has added emphasis on renewal of mixedwoods.

Figure 6 presents a graphical representation of the changes in the age classes over the term of the analysis. The source of this information is FMP-9 from the appropriate plans. A large effort was undertaken to assess the B&S/A5 category of stands and properly categorize them for the 2006 FMP. Much of this work took place during the 1992 term. The 2001 FMP utilized a new inventory which also categorized many of the stands from the B&S category into other age classes. This accounts for the relatively large increase in areas in the A15-A35 classes in the 2006 FMP.

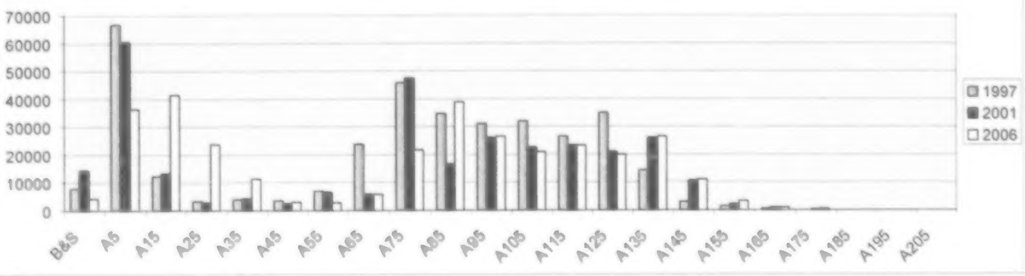


Figure 6: Age Class Trends by Term

It is also apparent from Figure 6 that the amount of area in the older age classes is increasing over time. The planning for the marten cores in the FMP and the emphasis on maintaining old growth has contributed to this trend.

Trends

- The total available productive forest area although having declined during the 1997 term is increasing;
- The Jack Pine and Balsam Fir component of the forest in increasing while the Spruce and Poplar components are decreasing and White Birch, Cedar and Larch are remaining constant;
- The amount of area in B&S/A5 is decreasing while the amount of area in older age classes is increasing.

Summary Report of Renewal, Tending and Protection Operations

The source of information for the Summary Report of Renewal, Tending and Protection is the 1996 FMPM Table FMP-25 for the planned numbers and the 1996 FMPM Table RPFO-7 for the actual numbers. Figure 7 graphically indicates a summary of planned versus actual renewal over the 3 terms of the trend analysis.

The graph indicates that the amount of actual natural regeneration is substantially less than the amount of planned natural regeneration. This has been identified in the 2002 audit as a concern and a recommendation was developed. The actions taken to address this recommendation were to begin reporting natural regeneration treatments on an annual basis in the year that they have occurred beginning with the annual report for 2003-04. Backlog of natural regeneration areas has been reported separately in 2004-05 annual report.

The planned planting area is roughly equivalent to the actual planting area over the terms that the actual information is available. The total renewal varies by the amount of variation in the natural regeneration.

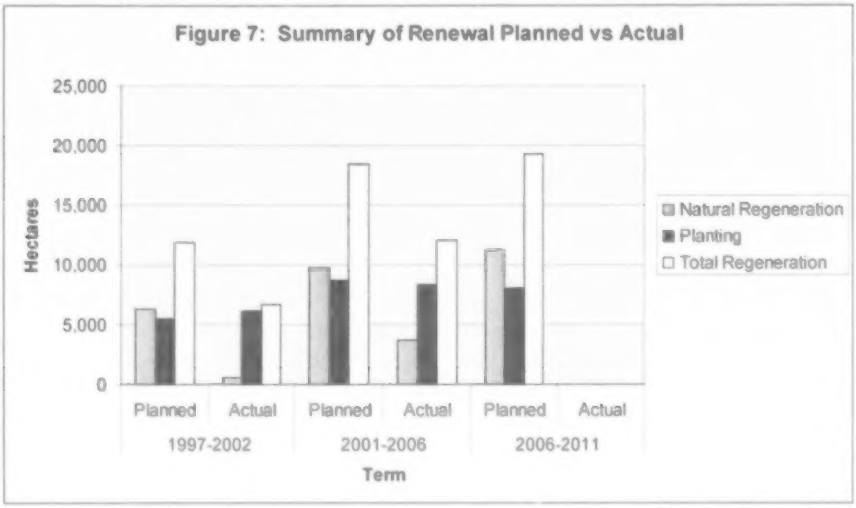


Figure 8 graphically represent the amount of planned site preparation versus the amount of actual site preparation. In both terms where the actual information is available the amount of actual site preparation is less than the amount planned. Pre-operations inspections of the site preparation blocks are carried out to determine the need for site preparation. In some cases the areas can be treated without site preparation. Through pre-operations inspections, areas where site preparation is not required are netted out of the gross area. The only areas that get treated are the areas that require site preparation for seedling growth and survival. The planned area is based on the pre-harvest structure of the stand and is necessarily not netted down until after the harvest is completed. The actual area is based on the stand structure post-harvest which can be quite different due to the amount of disturbance to the site. In some cases there is an abundance of woody debris following harvest which must be moved or aligned in order to allow planting to take place. Site preparation can also be used to provide control for natural regeneration of balsam fir, if it threatens to dominate the site.

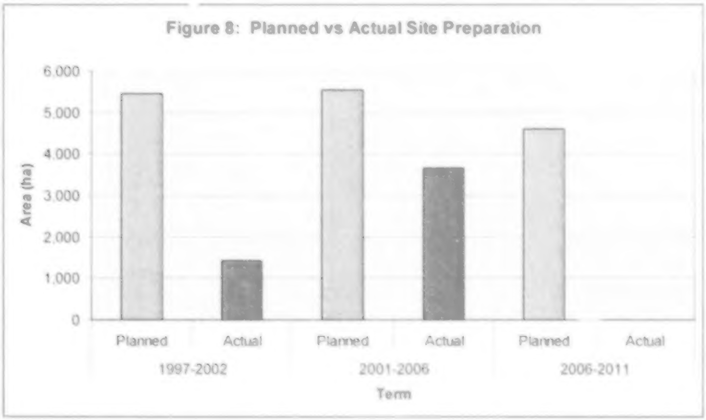
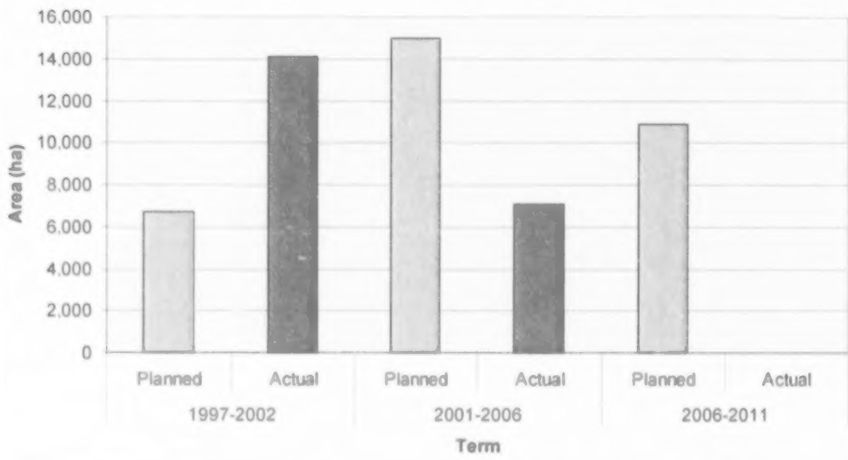


Figure 9 graphically illustrates the comparison of planned versus actual tending operations that occurred on the forest during the term of the trend analysis. As with the site preparation, pre-operation inspections are often completed on the tending blocks prior to commencement of operations to ensure that the stocking of renewal is adequate to require a treatment and that the competition levels are as predicted. If the stocking is low or the competition is light then the areas are removed from the tending program.

Figure 9: Planned vs Actual Tending



Trends

- The amount of actual natural regeneration is substantially less than the amount of planned natural regeneration;
- The amount of actual total regeneration is less than the amount of planned total regeneration;
- The amount of actual site preparation is less than the amount of planned site preparation;
- The amount of actual tending is less than the amount of planned tending.

Harvested Area Successfully Regenerated – Summary of All Forest Units

Table-7 presents a summary by total area (all forest units combined) of the area successfully regenerated during a five-year period of operation on the Nagagami Forest by even-aged and uneven-aged management. There is no uneven-aged management on the Nagagami Forest. The source of information for this table is Table TMPM 4.7 for the total area harvested in hectares and for the survey results Tables 1996 FMPM RPFO- 8 and 9 and a spatial analysis as documented below.

In order to determine the time period for the 'Total Area Harvested in Hectares' for Table 7 a standard delay of 10 years was used. The delay is to address the time lag that occurs between the time that regeneration operations occur and the time that the area is assessed for regeneration success. The assessment of regeneration success is an ongoing process with areas not-sufficiently regenerated at the time of assessment being placed back on a schedule for one of either additional regeneration operations or future regeneration assessment. The audit is a 2007 audit. For the purposes of Table-7 the base year is 2007. Taking into account the 10 year lag brings us back to 1997. The 5 years immediately preceding this date gives us the 1992 to 1997 period. Therefore, Table-7 indicates the area harvested during the 1992 to 1997 period and the regeneration assessment for the corresponding area at anytime since harvest operations have been completed.

The assessment information used for Table-7 includes the 2006 regeneration assessments. Since the information required for Table-7 is spatially linked to the areas harvested in the 1992 to 1997 period, it is impossible to gather this information from the Annual Report tables. This information must be collected from a spatial analysis of the harvesting and assessment geospatially referenced metadata.

Assessment of the harvested area continues until the area is declared regenerated. For example, there are 680 hectares of area harvested during the 1992 to 1997 period being assessed for regeneration success in the 2007 season. Once these areas have been assessed they will either be submitted for Free-to-Grow meaning that they are regenerated or they will be assigned for a follow-up regeneration treatment, such as a fill-in plant in the case of low stocking, or a tending treatment in the case of competitive sites, or they will be assigned a future assessment date in the case where the stand is sufficiently stocked, and free of competition, but does not meet the height standards as identified in FMP-10.

Of the 21,631 hectares harvested during the 1992 TMP there have been a total of 21,361 surveyed for regeneration success leaving 270 hectares in roads and landings that has not been surveyed. An area of 11, 732 hectares or 54.9% of the area harvested has been declared as successfully regenerated. This could have occurred any time after it was harvested and before the final assessments that have been included in the analysis in 2006. This leaves a total area of 9,629 not successfully regenerated. Regeneration operations or assessment surveys will continue on this area until it becomes classified as regenerated.

Trends

- A little over half of the area harvested during the 1992 to 1997 period has been successfully regenerated.

Appendix 1

Comparison and Trend Analysis of Planned vs. Actual Forest Operations Report Tables

Table 1: Summary of Total Area under Management - Past and Current Plans – Crown Managed

	Area in hectares		
	Past Plans		Current
Land Type	1997	2001	2006
Non-Forested			
Other Land	44,611	44,544	44,240
Forested			
Non-productive	18,875	18,687	18,659
Productive			
Protection	15,271	15,342	15,591
Production Forest			
B&S / NSR	7,727	14,150	4,196
Depleted	13,008	60,054	67,357
Working Group			
Pw	-	-	-
Pr		6	6
Pj	38,228	32,800	35,136
S	154,071	127,768	129,238
B	14,330	12,286	18,998
By			
C	6,776	5,937	6,346
L	4,609	4,385	4,681
Po	111,336	88,008	86,757
Bw	14,196	11,183	12,397
Mh	-	-	-
H	-	-	-
Total Production Forest	364,281	356,577	365,112
Total Forested Land	398,427	390,605	399,362

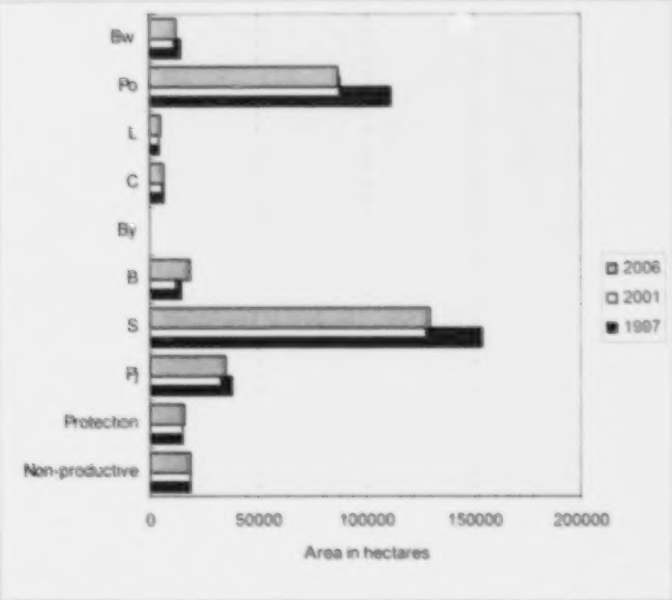


Table 2: Description of Forest Units (1996FMP-8)

Forest Unit Description for the 1997 to 2002 FMP

Forest Unit		FOREST TYPE	MAIN WG	SITE TYPES*	SILVICULTURAL SYSTEM	FRI PARAMETERS &DEFINITION	ADDITIONAL INFORMATION
Code	Name						
OC0	Other Conifer	conifer	La or Ce	13	clearcut	La + Ce > 60% of stand compostion	The order in which the forest unit selection takes place determines which unit a stand will fall into
Sp3	Site Class 3 Spruce	conifer	Sb or Sw	11,12,13	clearcut	Sb or Sw working group, site class 3	
Splow	Spruce lowlands	conifer	Sb or Sw	11	clearcut	Sb + Sw > 60% of stand composition and the entire stand is made up of any combination of Sb, Ce, La and Bf, or Sb > 0.7 and La, Ce, or Bf are present in the stand	
Sp0	Upland spruce	conifer	Sb or Sw	11,12,13	clearcut	Sb + Sw > 60% of the stand. Splow stands previously extracted	
PPo3	Site Class 3 Poplar	hardwood	Po	3,7a,7b	clearcut	Po > 60% of the stand, site = 3	
PPo1	Upland Poplar	hardwood	Po	10,3	clearcut	Po > 60% of the stand	
MH	Mixed Hardwoods	hardwood	Po	10,7b,3		Bw + Po > 60% of the stand	
PPj	Pure Jack Pine	conifer	Pj	2b,3	clearcut	Pj > 60% of the stand	
Bamix	Balsam Mixedwood	mixedwood	Bf	6b,9	clearcut	remaining stands where Bf > 30% of the stand	
Mixed	Mixedwood	mixedwood	Po	10,3,6b,7b	clearcut	remaining stands where Po + Bw > 30% of the stand	
MC	Mixed Conifer	conifer	Sb, Sw, Pj	2a,2b	clearcut	Sb + Sw + Pj + Bf > 60 % of the stand (stands with Sb+Ce+La+Bf > 70% resort to Splow)	
TZHwd	Tourism Zone Hardwood	hardwood	Po	3,7a,7b,10	partial harvest	Area located in the 500 to 1000 metre zone from a designated lake, that occurs within the PPo1, PPo3, or MH forest units	
TZMix	Tourism Zone Mixedwood	mixedwood	Bf, Po	6b, 9, 10, 3, 7b	partial harvest	Area located in the 500 to 100 metre zone from a designated lake, that occurs within the Bamix or Mixed forest units	
TZSwd	Tourism Zone Softwood	conifer	Sb, Sw, Pj	2b, 3, 2a, 11	partial harvest	Area located in the 500 to 100 metre zone from a designated lake, that occurs within the Sp0, PPj, or MC forest units	

Forest Unit Description for the 2001 to 2006 FMP

Forest Unit		Forest Type	Main Working Group	Site Type(s)*	Silvicultural System	FRI Parameters & Criteria	Sort Order
Code	Name						
Sb1	Lowland Spruce Pure SCX,1,2	Conifer	Black Spruce	11, 8, 12, 13, 5a, 5b	Clearcut	sb>=.8 and mh+uh+pr=0 and pw+pj<=.1 or sb>=0.6 and sb+ce+la>=0.8 and sc="X" or sc="1" or s	1
Sb3	Lowland Spruce Pure SC 3	Conifer	Black Spruce	11, 14, 13, 12, 5a, 5b	Clearcut	sb>=.8 and mh+uh+pr=0 and pw+pj<=.1 or sb>=0.6 and sb+ce+la>=0.8 and sc="3" or sc="4"	2
Pj1	Jack Pine Pure All SC	Conifer	Jack pine	2a, 2b, 4, 1, 3a, 3b	Clearcut	pj>=.7 and po+bw+mh+lh+uh<=.2	3
LC1	Lowland Conifer All SC	Conifer	Cedar/Larch	13, 12, 14, 1, 8, 3a, 3b, 6a, 6b	Clearcut	ce+la+sb>=.8 and mh+uh+pr=0 and pw+pj<=.1 or ce+la>=.6	4
Pj2	Pine Spruce Mixedwood	Conifer	Jack Pine	4, 3, 1	Clearcut	((pj+sb+pr>=.7 or (pj>=.5 and pj+sb+sw+bf+he+pw+pr+ce+la>=.7 and bf+sw+he+pw+ce+la<=.2)) and pj>=sb	5
SP1	Spruce Pine Mixedwood	Conifer	Black Spruce	5a, 5b, 3a, 3b, 6a, 6b, 6c, 9, 1, 14, 4	Clearcut	sb+sw+bf+ce+la+pw+pj+pr+he>=.7 and (bf+ce+pw+la+sw+he<=.2 or pj>=.3)	6
SF1	Spruce Fir Mixedwood	Conifer	Black Spruce	9, 6a, 6b, 6c, 3a, 3b, 1, 12, 13	Clearcut	sb+sw+bf+ce+la+pw+pj+pr+he>=.7	7
Po1	Poplar Pure SCX,1,2	Intolerant Hard	Poplar	10, 7a, 7b, 1	Clearcut	po+bw+mh+uh+lh>=.7 and po>=.5 and sc="x" or sc="1" or sc="2"	8
Po3	Poplar Pure SC 3,4	Intolerant Hard	Poplar	10, 1	Clearcut	po+bw+mh+uh+lh>=.7 and po>=.5 and sc="3" or sc="4"	9
BW1	White Birch Poplar Mixedwood	Intolerant Hard	White Birch	10, 7a, 7b, 1	Clearcut	po+bw+mh+uh+lh>=.7 and po<0.4	10
MW1	Mixedwood Jack Pine	Mixedwood	PO/BW/Pj	3a, 3b, 10, 1, 7	Clearcut	pj+pr>=.2 and po+pj>=0.6	11
MW2	Mixedwood Spruce Poplar	Mixedwood	Po/Sb	6a, 6b, 6c, 10, 7, 1	Clearcut	remaining stands	12

* Site Types listed in order of prevalence and bold denotes most representative site types

** Based on the enhanced planning schedule

Source: FMPM FMP - 8
TMPM table 4.11

Forest Unit Description for the 2006 to 2011 FMP

FU Code	FU Name	Forest Type	Working Group %	Main Site Types	Habitat Unit Proportions*	Silv. System	FU Parameters And Criteria	NER Standard FU	Sort Order	Average Composition %	Avg Stocking	Avg Site Class
BOG	Black Spruce Bog	black spruce unproductive	88% Sb, 11% La	72% 14, 11% 13, 7% 11, 3% 12, 3% 4, 2% 7, 1% 3	100% Bog	clearcut (claag)	SB + LA >= 70 And PW = 0 And SC = 4	Yes	1	Sb80 La 17 Ce 2	0.72	4.0
PR1	Red Pine	upland conifer	100% Pr	100% 19	100% Pr1	clearcut	PR >= 70	Yes	2	Pr100	0.8	2.0
SB1	Lowland to Intermediate Black Spruce Pure SC X and 1	pure lowland and intermediate black spruce	100% Sb	27% 11, 21% 13, 14% 5, 11% 12, 8% 8, 6% 4, 4% 6, 3% 9, 2% 7, 1% 1, 1% 10	87.5% SB1, 12.5% LC1	clearcut (claag)	SB >= 80 And MH + UH + PR = 0 And PW + PJ <= 10 And SC = 0 Or SB >= 80 And MH + UH + PR = 0 And PW + PJ <= 10 And SC = 1 Or SB >= 80 And SB + LA + CE >= 80 And PW + PJ <= 10 And SC = 0 Or SB >= 80 And SB + LA + CE >= 80 And PW + PJ <= 10 And SC = 1	No, split by SC added high Sb comp stands from LC1	3	Sb84 La6 Ce4 Po2 Bf2 Bw1 Sw1	0.58	1.0
SB3	Lowland Black Spruce Pure SC 2 and 3	pure lowland black spruce	100% Sb	40% 13, 27% 11, 14% 12, 5% 8, 3% 7, 2% 6, 2% 9, 2% 5, 2% 4, 2% 14, 1% 2, 1% 3	80.9% SB1, 19.1% LC1	clearcut (claag)	SB >= 80 And MH + UH + PR = 0 And PW + PJ <= 10 And SC = 2 Or SB >= 80 And SB + LA + CE >= 80 And PW + PJ <= 10 And SC = 2 Or SB >= 80 And MH + UH + PR = 0 And PW + PJ <= 10 And SC = 3 Or SB >= 80 And SB + LA + CE >= 80 And PW + PJ <= 10 And SC = 3	No, split by SC and added high Sb comp stands from LC1	4	Sb85 La7 Ce5 Po1 Bf1 Pj1	0.84	2.4 (2.5)
PJ1	Jack Pine Pure All sc	upland conifer	100% Pj	73% 2, 7% 6, 4% 7, 3% 1, 3% 3, 3% 4, 2% 8, 2% 11, 1% 12, 1% 13, 1% 14	100% Pj1	clearcut	PJ >= 70 And PO + BW + MH + UH + LH <= 20	Yes	5	Pj77 Sb13 Po6 Bw 1	0.80	1.9 (2.0)
LC1	Lowland Conifer All SC	lowland conifer	44% Ce, 34% La, 23% Sb	81% 13, 3% 14, 3% 7, 3% 9, 2% 11, 2% 12, 1% each for 2, 3, 4, 5, 8, and 6	97.6% LC1, 0.2% SP1, 2.2% SF1	clearcut (claag)	(CE + LA + SB >= 80 And MH + UH + PR = 0 And PW + PJ <= 10) Or CE + LA >= 80	No, removed high comp Sb and added high comp Ce and La stands	6	La35 Sb32 Ce28 Bf3 Pj1 Po1	0.58	1.6 (2.0)
PJ2	Pine Spruce Mixedwood	upland conifer mixedwood	98% Pj, 2% Sb	28% 4, 25% 6, 18% 2, 7% 3, 6% 7, 5% 13, 4% 1, 2% 11, and 1% each for 12, 14, 5, 8 and 9	100% PJ2	clearcut	(PJ + SB + PR >= 70 Or (PJ >= 50 And SF1 >= 70 And BF + SW + HE + PW + CE + LA <= 20)) And PJ >= SB	Yes	7	Pj64 Sb26 Po6 Bw 3 1% to Bf, Ce, Sw combin	0.71	1.8 (2.0)
SP1	Spruce Pine Mixedwood	upland conifer	87% Sb, 10% Pj, 2% Bf, 1% Sw	27% 6, 22% 4, 9% 9, 8% 13, 6% 12, 6% 7, 4% 11, 4% 8, 3% 1, 3% 5, 2% 10, 2% 2, 1% 3, 1% 14	100% SP1	clearcut	SB + SW + BF + CE + LA + PW + PJ + PR + HE >= 70 And (BF + CE + PW + LA + SW + HE <= 20 Or PJ >= 30)	Yes	8	Sb56 Pj21 Po10 Bf5 Bw3 Ce2 Sw2 Ce1	0.56	1.6 (1.5)
SF1	Spruce Fir Mixedwood	upland conifer	39% Bf, 29% Sb, 26% Sw, 3% Ce, 2% Po, 1% Bw	42% 6, 18% 9, 11% 7, 9% 13, 5% 5, 3% 10, 3% 11, 3% 12, 2% 2, 2% 1, and 1% each for 3, 4, and 8	100% SF1	clearcut	SB + SW + BF + CE + LA + PW + PJ + PR + HE >= 70	Yes	9	Bf33 Sb23 Sw14 Po10 Bw10 Ce6 Pj2 Ce1	0.60	1.2 (1.0)
PO1	Poplar Pure SC = x and 1	upland hardwood	100% Po	80% 7, 9% 10, 4% 8, 2% 11, and 1% each for 13, 2, 3, and 5	100% PO1	clearcut	PO + BW + MH + UH + LH >= 70 And PO >= 50 and Sc=X or 1	No, split by SC	10	Po80 Bw8 Sb5 Pj3 Sw3 Bf3	0.50	1.0 (1.0)
PO3	Poplar Pure SC = 2 and 3	upland hardwood	100% Po	86% 7, 6% 10, 2% 13, 2% 3 and 1% each for 1, 6 and 9	100% PO1	clearcut	PO + BW + MH + UH + LH >= 70 And PO >= 50 and Sc=2 or 3 or 4	No, split by SC	11	Po74 Sb8 Bw8 Pj6 Bf3 Sw2	0.52	2.3 (2.5)
BW1	White Birch Poplar Mixedwood	mixedwood hardwood	81% Bw, 19% Po	38% 3, 36% 7, 12% 10, 4% 13, 4% 9, 3% 6, 1% 2, and 1% 5	98.9% BW1, 1.1% PO1	clearcut	PO + BW + MH + UH + LH >= 70	Yes	12	Bw52 Po24 Sb8 Bf8 Sw6 Pj2	0.54	2.2 (2.0)
MW1	Jack Pine Poplar Mixedwood	mixedwood	70% Po, 27% Pj, 2% Bw, 1% SB	48% 7, 29% 8, 10% 3, 4% 1, 2% 10, 2% 13, and 1% each for 11, 2, and 9	100% MW1	clearcut	PJ + PR >= 20	Yes	13	Po44 Pj30 Sb14 Bw7 Bf3 Sw2	0.70	2.1 (2.0)
MW2	Black Spruce Poplar Mixedwood	mixedwood	52% Po, 22% Bw, 15% Bf, 7% Sb, 4% Sw	40% 7, 29% 8, 11% 10, 8% 9, 6% 3, 2% 11, and 1% each for 13, 1, and 4	100% MW2	clearcut	[illegible]	Yes	14	Po32 Bw18 Sb17 Bf15 Sw13 Pj3 Ce1	0.61	1.9 (2.0)

Source: SFMMTOOL Sort Criteria

Table 3: Summary of Planned and Actual Harvest Volumes

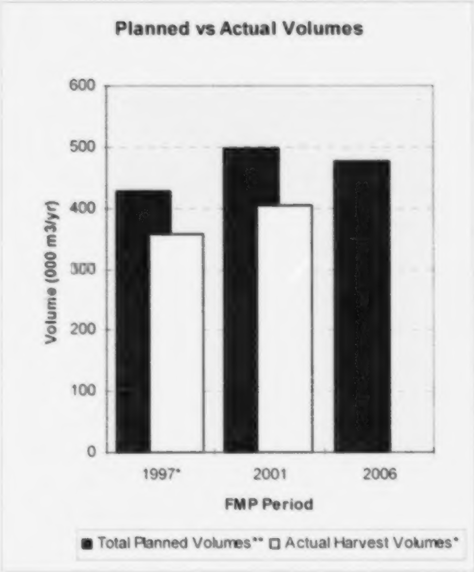
Volumes are annualized for the indicated five-year period.

	Volume in '000's cubic metres		
	Past Plans		Current
Species	1997**	2001	2006
Spr	156	157.5	186.7
Pj	58	82.4	83.8
Bf	18	14.5	10.1
Ce	-	7.2	3.2
La	-	8.3	-
Po	175	202.3	174.9
Bw	21	23.9	16.6
Total Planned Volumes	428.0	496.1	475.3

Actual TREES harvest volumes

Volumes are annualized for the indicated five-year period

	Volume in '000's cubic metres		
	Past Plans		Current
Species	1997*	2001	2006
Spr	162.9	153.1	
Pj	66.3	66.3	
Bf	0.5	2.7	
Ce	1.8	0.4	
La	0.1	0.0	
Po	125.8	179.0	
Bw	1.0	1.4	
Total Actual Volumes	358.3	402.9	



Source:

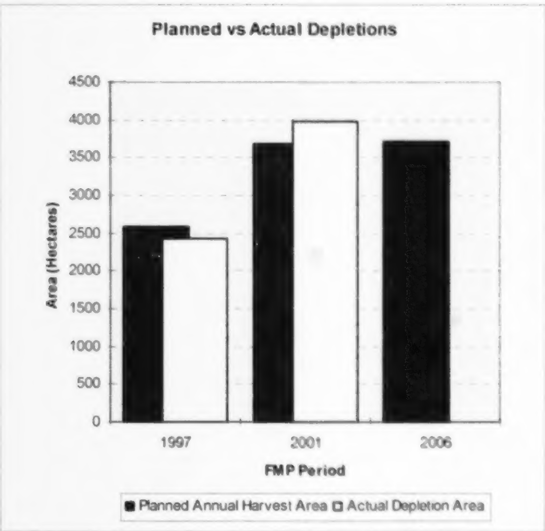
FMPM - RPFO-4
FMPM - FMP -21
TREES
* based on four years of operations during the plan.
** Adjusted to 4 years of planned operations

Table 4: Summary of Planned & Actual Depletion Area

Past and Current Plans

Areas are annualized for the indicated five-year period

Planned Annual Harvest Area				Actual Depletion Area					
	Area in hectares			*Area in hectares*					
	Past Plans		Current	Past Plans					
Plan Term	1997	2001	2006	1997		2001		2006	
Forest Unit				Harvest	Natural	Harvest	Natural	Harvest	Natural
PPj	91	0	0	103	0	0	0		
OC0	13	0	0	11	0	0	0		
SP3	80	0	0	58	0	0	0		
SPLOW	664	0	0	631	0	0	0		
SP0	136	0	0	124	0	0	0		
PPo3	21	0	0	21	0	0	0		
MH	248	0	0	222	0	0	0		
Bamix	128	0	0	136	0	0	0		
Mxwd	451	0	0	442	0	0	0		
MC	319	0	0	344	0	0	0		
PPo1	374	0	0	336	0	0	0		
TZ Hwd	15	0	0	0	0	0	0		
TZ Mix	16	0	0	0	0	0	0		
TZ Swd	18	0	0	0	0	0	0		
BOG	0	0	0	0	0	0	0		
PR1	0	0	0	0	0	0	0		
SB1	0	463	120	0	0	392	273		
SB3	0	194	922	0	0	129	35		
PJ1	0	231	256	0	0	214	24		
LC1	0	169	90	0	0	81	25		
PJ2	0	262	301	0	0	233	35		
SP1	0	249	274	0	0	220	29		
SF1	0	171	158	0	0	149	26		
PO1	0	782	76	0	0	730	190		
PO3	0	319	750	0	0	282	2		
BW1	0	73	55	0	0	70	26		
MW1	0	339	371	0	0	302	25		
MW2	0	431	338	0	0	385	93		
Total Area:	2,576	3,683	3,711	2,429	0	3,187	782		



Source: Planned harvest area FMP-18; Actual depletion area: 1997 Term – 1996 FMPM RPFO-2; 2001 Term – 2004 FMPM AR-1 and AR-6.

Table 5: Summary of Managed Productive Forest by Forest Unit (1996 FMPM FMP-9)

1997 – 2002 FMP

Forest Unit	Age Class	Protection Forest		Production Forest				
				Unavailable		Stage of Management	Available	
		(ha)	(m³)	(ha)	(m³)		(ha)	(m³)
PPj	A5	0	0	0	0	na	3,838	0
	A15	0	0	0	0	na	543	0
	A25	0	0	0	0	na	496	7936
	A35	7	301	0	0	na	299	12857
	A45	0	0	0	0	na	194	13774
	A55	0	0	0	0	na	250	23250
	A65	11	1342	0	0	na	2,483	302926
	A75	204	29580	78	11310	na	5,399	782855
	A85	12	1980	3	495	na	2,983	492195
	A95	0	0	63	11088	na	1,182	208032
	A105	0	0	11	1947	na	602	106554
	A115	0	0	0	0	na	79	10823
	A125	0	0	18	1638	na	68	6188
	A135	0	0	0	0	na	8	352
	A145	0	0	30	450	na	25	375
	A155	0	0	2	26	na	0	0
	A165	0	0	0	0	na	19	228
	A175	0	0	0	0	na	0	0
	A185	0	0	0	0	na	12	108
	A195	0	0	0	0	na	0	0
Forest Unit Subtotal		234	33203	205	26954		18,480	1,968,453
OC0	A5	8	0	0	0	na	393	0
	A15	0	0	0	0	na	0	0
	A25	0	0	0	0	na	0	0
	A35	0	0	0	0	na	0	0
	A45	0	0	0	0	na	0	0
	A55	29	29	0	0	na	0	0
	A65	13	208	0	0	na	0	0
	A75	66	1716	0	0	na	31	806
	A85	103	3708	9	324	na	272	9792
	A95	51	2397	0	0	na	539	25333
	A105	816	45696	27	1512	na	1,654	92624
	A115	129	7740	26	1560	na	1,254	75240
	A125	163	10269	0	0	na	1,041	65583
	A135	15	960	4	256	na	386	24704
	A145	0	0	0	0	na	55	3300
	A155	46	2070	0	0	na	57	2565
	A165	0	0	0	0	na	16	576
	A175	0	0	0	0	na	0	0
	A185	0	0	0	0	na	0	0
	A195	0	0	0	0	na	0	0
Forest Unit Subtotal		1439	74793	66	3652		5698	300523

Table 5: continued

1997 – 2002 FMP

Forest Unit	Age Class	Protection Forest		Production Forest				
				Unavailable		Stage of Management	Available	
		(ha)	(m^3)	(ha)	(m^3)		(ha)	(m^3)
Sp3	A5	0	0	0	0	na	1,947	0
	A15	0	0	0	0	na	48	0
	A25	15	0	0	0	na	0	0
	A35	0	0	0	0	na	0	0
	A45	21	21	0	0	na	264	264
	A55	79	158	0	0	na	81	162
	A65	1132	2264	19	38	na	2,407	4814
	A75	826	8260	5	50	na	1,282	12820
	A85	523	16213	9	279	na	1,987	61597
	A95	752	34592	12	552	na	2,224	102304
	A105	1371	75405	171	9405	na	2,632	144760
	A115	1536	93696	85	5185	na	3,176	193736
	A125	3513	210780	164	9840	na	7,667	460020
	A135	1705	104005	41	2501	na	1,400	85400
	A145	110	7040	0	0	na	322	20608
	A155	81	5184	0	0	na	28	1792
	A165	0	0	9	522	na	78	4524
	A175	0	0	0	0	na	0	0
	A185	0	0	0	0	na	18	702
	A195	0	0	0	0	na	0	0
Forest Unit Subtotal		11664	557618	515	28372		25561	1093503
Splow	A5	0	0	0	0	na	20,570	0
	A15	0	0	0	0	na	5,807	0
	A25	0	0	2	0	na	56	0
	A35	0	0	0	0	na	432	6480
	A45	0	0	17	561	na	111	3663
	A55	0	0	0	0	na	287	14924
	A65	15	1095	16	1168	na	1,511	110303
	A75	12	1140	56	5320	na	1,267	120365
	A85	25	2850	22	2508	na	3,223	367422
	A95	34	4216	44	5456	na	5,266	652984
	A105	117	14976	231	29568	na	8,893	1138304
	A115	33	4125	178	22250	na	10,999	1374875
	A125	82	9266	469	52997	na	16,681	1884953
	A135	9	864	332	31872	na	8,778	842688
	A145	7	602	85	7310	na	1,679	144394
	A155	0	0	35	2625	na	941	70575
	A165	0	0	0	0	na	176	11616
	A175	0	0	0	0	na	0	0
	A185	0	0	6	354	na	51	3009
	A195	0	0	1	57	na	15	855
Forest Unit Subtotal		334	39134	1494	162046		86743	6747410

Table 5: continued

1997 – 2002 FMP

Forest Unit	Age Class	Protection Forest		Production Forest				
				Unavailable		Stage of Management	Available	
		(ha)	(m^3)	(ha)	(m^3)		(ha)	(m^3)
Sp0	A5	0	0	0	0	na	3,731	0
	A15	0	0	50	0	na	4,728	0
	A25	0	0	0	0	na	43	172
	A35	0	0	0	0	na	147	3381
	A45	0	0	0	0	na	56	2576
	A55	0	0	0	0	na	292	20148
	A65	0	0	40	3920	na	883	86534
	A75	0	0	58	6960	na	1,428	171360
	A85	0	0	85	11390	na	1,331	178354
	A95	0	0	74	10286	na	891	123849
	A105	0	0	164	22632	na	1,553	214314
	A115	0	0	90	11340	na	1,822	229572
	A125	0	0	250	26000	na	2,648	275392
	A135	0	0	68	5440	na	1,001	80080
	A145	0	0	41	2542	na	260	16120
	A155	0	0	0	0	na	199	9751
	A165	0	0	0	0	na	0	0
	A175	0	0	8	240	na	31	930
	A185	0	0	0	0	na	0	0
	A195	0	0	0	0	na	0	0
Forest Unit Subtotal		0	0	928	100750		21044	1412533
PPo3	A5	0	0	0	0	na	796	0
	A15	0	0	26	0	na	213	0
	A25	0	0	0	0	na	179	358
	A35	0	0	0	0	na	108	2160
	A45	0	0	0	0	na	53	2279
	A55	0	0	0	0	na	7	490
	A65	0	0	14	1372	na	1,768	173264
	A75	0	0	40	4960	na	5,175	641700
	A85	10	1520	262	39824	na	2,269	344888
	A95	0	0	79	12403	na	669	105033
	A105	0	0	13	1820	na	315	44100
	A115	0	0	9	954	na	47	4982
	A125	0	0	0	0	na	0	0
	A135	0	0	0	0	na	0	0
	A145	0	0	0	0	na	0	0
	A155	0	0	0	0	na	0	0
	A165	0	0	0	0	na	0	0
	A175	0	0	0	0	na	0	0
	A185	0	0	0	0	na	0	0
	A195	0	0	0	0	na	0	0
Forest Unit Subtotal		10	1520	443	61333		11599	1319254

Table 5: continued

1997 – 2002 FMP

Forest Unit	Age Class	Protection Forest		Production Forest				
				Unavailable		Stage of Management	Available	
		(ha)	(m³)	(ha)	(m³)		(ha)	(m³)
MH	A5	0	0	1	0	na	4,105	0
	A15	0	0	0	0	na	57	0
	A25	0	0	0	0	na	98	1176
	A35	0	0	4	164	na	468	19188
	A45	9	621	50	3450	na	349	24081
	A55	0	0	39	3510	na	989	89010
	A65	0	0	82	9840	na	2,404	288480
	A75	30	4080	87	11832	na	4,635	630360
	A85	0	0	223	33450	na	3,313	496950
	A95	139	21823	370	58090	na	3,863	606491
	A105	137	20002	84	12264	na	2,343	342078
	A115	35	4340	84	10416	na	392	48608
	A125	0	0	121	9680	na	528	42240
	A135	0	0	0	0	na	0	0
	A145	0	0	0	0	na	0	0
	A155	0	0	0	0	na	0	0
	A165	0	0	0	0	na	0	0
	A175	0	0	0	0	na	0	0
	A185	0	0	0	0	na	0	0
	A195	0	0	0	0	na	0	0
Forest Unit Subtotal		350	50866	1145	152696		23544	2588662
BaMix	A5	0	0	0	0	na	1,061	0
	A15	0	0	0	0	na	49	0
	A25	0	0	0	0	na	7	35
	A35	0	0	11	242	na	110	2420
	A45	0	0	65	3770	na	1,099	63742
	A55	0	0	124	10540	na	2,374	201790
	A65	0	0	164	16728	na	693	70686
	A75	0	0	402	43818	na	1,427	155543
	A85	0	0	309	34299	na	1,238	137418
	A95	0	0	266	28994	na	1,030	112270
	A105	0	0	337	35048	na	1,055	109720
	A115	0	0	0	0	na	43	3956
	A125	0	0	0	0	na	26	1794
	A135	0	0	0	0	na	0	0
	A145	0	0	0	0	na	0	0
	A155	0	0	0	0	na	21	672
	A165	0	0	0	0	na	0	0
	A175	0	0	0	0	na	0	0
	A185	0	0	0	0	na	0	0
	A195	0	0	0	0	na	0	0
Forest Unit Subtotal		0	0	1678	173439		10233	860046

Table 5: continued

1997 – 2002 FMP

Forest Unit	Age Class	Protection Forest		Production Forest				
				Unavailable		Stage of Management	Available	
		(ha)	(m^3)	(ha)	(m^3)		(ha)	(m^3)
Mxwd	A5	0	0	1	0	na	6,106	0
	A15	67	0	0	0	na	303	0
	A25	0	0	0	0	na	656	0
	A35	0	0	0	0	na	1,272	38160
	A45	26	1326	4	204	na	877	44727
	A55	21	1680	0	0	na	1,649	131920
	A65	25	2925	129	15093	na	3,512	410904
	A75	35	4865	98	13622	na	7,402	1028878
	A85	85	13090	301	46354	na	5,738	883652
	A95	95	14060	386	57128	na	6,401	947348
	A105	166	21912	1038	137016	na	7,038	929016
	A115	125	13500	984	106272	na	4,508	486864
	A125	15	1125	1012	79800	na	2,988	224100
	A135	0	0	568	24424	na	1,186	50998
	A145	0	0	80	2640	na	420	13860
	A155	0	0	8	240	na	12	360
	A165	0	0	88	2376	na	166	4482
	A175	0	0	0	0	na	0	0
	A185	0	0	0	0	na	0	0
	A195	0	0	0	0	na	0	0
Forest Unit Subtotal		660	74483	4697	481269		50234	5195269
MC	A5	0	0	0	0	na	3,454	0
	A15	0	0	0	0	na	212	0
	A25	0	0	0	0	na	339	3051
	A35	0	0	0	0	na	375	11250
	A45	0	0	21	1176	na	223	12488
	A55	61	5002	7	574	na	679	55678
	A65	0	0	19	2204	na	3,380	392080
	A75	90	13140	196	28616	na	6,705	978930
	A85	0	0	216	35208	na	4,589	748007
	A95	0	0	183	30744	na	3,186	535248
	A105	23	3795	466	76890	na	3,255	537075
	A115	0	0	329	46718	na	2,718	385956
	A125	0	0	369	39114	na	2,372	251432
	A135	0	0	108	7560	na	1,151	80570
	A145	0	0	91	4641	na	157	8007
	A155	0	0	19	893	na	69	3243
	A165	0	0	0	0	na	0	0
	A175	0	0	0	0	na	46	1794
	A185	0	0	0	0	na	0	0
	A195	0	0	0	0	na	0	0
Forest Unit Subtotal		174	21937	2024	274338		32910	4004809

Table 5: continued

1997 – 2002 FMP

Forest Unit	Age Class	Protection Forest		Production Forest				
				Unavailable		Stage of Management	Available	
		(ha)	(m^3)	(ha)	(m^3)		(ha)	(m^3)
PPo1	A5	0	0	0	0	na	20,539	0
	A15	0	0	0	0	na	72	0
	A25	0	0	47	1034	na	1,406	30932
	A35	0	0	0	0	na	801	51264
	A45	0	0	0	0	na	166	16268
	A55	0	0	0	0	na	120	15360
	A65	0	0	6	978	na	4,464	727632
	A75	0	0	283	53770	na	10,155	1929450
	A85	0	0	314	65312	na	7,176	1492608
	A95	0	0	491	99182	na	5,042	1018484
	A105	0	0	281	52828	na	1,745	328060
	A115	0	0	93	13857	na	917	136633
	A125	0	0	119	9758	na	328	26896
	A135	0	0	34	816	na	139	3336
	A145	0	0	0	0	na	0	0
	A155	0	0	0	0	na	0	0
	A165	0	0	0	0	na	0	0
	A175	0	0	0	0	na	0	0
	A185	0	0	0	0	na	0	0
	A195	0	0	0	0	na	0	0
Forest Unit Subtotal		0	0	1668	297535		53070	5776923
TZhwd	A5	0	0	0	0	na	0	0
	A15	0	0	0	0	na	17	0
	A25	0	0	0	0	na	0	0
	A35	0	0	0	0	na	1	54
	A45	0	0	0	0	na	12	1032
	A55	0	0	0	0	na	0	0
	A65	0	0	0	0	na	3	435
	A75	0	0	0	0	na	281	47770
	A85	0	0	0	0	na	315	59220
	A95	0	0	0	0	na	366	68076
	A105	0	0	0	0	na	172	29756
	A115	0	0	0	0	na	57	7923
	A125	0	0	0	0	na	65	5265
	A135	0	0	0	0	na	16	432
	A145	0	0	0	0	na	0	0
	A155	0	0	0	0	na	0	0
	A165	0	0	0	0	na	0	0
	A175	0	0	0	0	na	0	0
	A185	0	0	0	0	na	0	0
	A195	0	0	0	0	na	0	0
Forest Unit Subtotal		0	0	0	0		1305	219963

Table 5: continued

1997 – 2002 FMP

Forest Unit	Age Class	Protection Forest		Production Forest				
				Unavailable		Stage of Management	Available	
		(ha)	(m^3)	(ha)	(m^3)		(ha)	(m^3)
TZmix	A5	0	0	0	0	na	0	0
	A15	0	0	0	0	na	0	0
	A25	0	0	0	0	na	0	0
	A35	0	0	0	0	na	0	0
	A45	0	0	0	0	na	25	1350
	A55	0	0	0	0	na	78	6318
	A65	0	0	0	0	na	36	4032
	A75	0	0	0	0	na	204	26520
	A85	0	0	0	0	na	187	26554
	A95	0	0	0	0	na	291	39576
	A105	0	0	0	0	na	453	55719
	A115	0	0	0	0	na	212	21624
	A125	0	0	0	0	na	228	16644
	A135	0	0	0	0	na	55	2365
	A145	0	0	0	0	na	6	198
	A155	0	0	0	0	na	0	0
	A165	0	0	0	0	na	27	756
	A175	0	0	0	0	na	0	0
	A185	0	0	0	0	na	0	0
	A195	0	0	0	0	na	0	0
Forest Unit Subtotal		0	0	0	0		1802	201656
TZswd	A5	0	0	0	0	na	1	0
	A15	0	0	0	0	na	24	0
	A25	0	0	0	0	na	0	0
	A35	0	0	0	0	na	0	0
	A45	0	0	0	0	na	21	1155
	A55	0	0	0	0	na	7	560
	A65	0	0	0	0	na	21	2331
	A75	0	0	0	0	na	173	23701
	A85	0	0	0	0	na	108	16740
	A95	0	0	0	0	na	144	23184
	A105	0	0	0	0	na	171	27189
	A115	0	0	0	0	na	232	31320
	A125	0	0	0	0	na	228	23712
	A135	0	0	0	0	na	164	11644
	A145	0	0	0	0	na	20	1000
	A155	0	0	0	0	na	1	44
	A165	0	0	0	0	na	8	304
	A175	0	0	0	0	na	0	0
	A185	0	0	0	0	na	0	0
	A195	0	0	0	0	na	0	0
Forest Unit Subtotal		0	0	0	0		1323	162884

Table 5: continued

1997 – 2002 FMP

Forest Unit	Age Class	Protection Forest		Production Forest				
				Unavailable		Stage of Management	Available	
		(ha)	(m^3)	(ha)	(m^3)		(ha)	(m^3)
All Forest Units	A5	8	0	2	0	na	66,541	0
	A15	67	0	76	0	na	12,073	0
	A25	15	0	49	1,034	na	3,280	43,660
	A35	7	301	15	406	na	4,013	147,214
	A45	56	1,968	157	9,161	na	3,450	187,399
	A55	190	6,869	170	14,624	na	6,813	559,610
	A65	1,196	7,834	489	51,341	na	23,565	2,574,421
	A75	1,263	62,781	1,303	180,258	na	45,564	6,551,058
	A85	758	39,361	1,753	269,443	na	34,729	5,315,397
	A95	1,071	77,088	1,968	313,923	na	31,094	4,568,212
	A105	2,630	181,786	2,823	380,930	na	31,881	4,099,269
	A115	1,858	123,401	1,878	218,552	na	26,456	3,012,112
	A125	3,773	231,440	2,522	224,927	na	34,868	3,284,219
	A135	1,729	105,829	1,155	72,869	na	14,284	1,182,569
	A145	117	7,642	327	17,583	na	2,944	207,862
	A155	127	7,254	64	3,784	na	1,328	89,002
	A165	0	0	97	2,898	na	490	22,486
	A175	0	0	8	240	na	77	2,724
	A185	0	0	6	354	na	81	3,819
	A195	0	0	1	57	na	15	855
Forest Unit Subtotal		14,865	853,554	14,863	1,762,384		343,546	31,851,888

Source:
FMPM FMP-9
TMPM table 4.8.2
TMPM table 4.9

Table 5: continued

For the 2001 to 2006 planning period

Forest Unit	Age Class	Protection Forest		Production Forest					
		Unavailable		Unavailable		Stage of Manage	Available		Yield
		(ha)	(m^3)	(ha)	(m^3)		(ha)	(m^3)	m3/ha
BW1	b&s	0	0	0	0	n/a	1975	0	0
	1-10	0	0	7	0	n/a	23	0	0
	11-20	0	0	40	0	n/a	54	0	0
	21-30	0	0	0	0	n/a	0	0	4
	31-40	0	0	3	66	n/a	32	704	22
	41-50	0	0	2	82	n/a	99	3,861	39
	51-60	9	515	79	4,418	n/a	316	17,696	56
	61-70	0	0	9	693	n/a	70	5,390	77
	71-80	30	0	102	9,153	n/a	1407	126,630	90
	81-90	0	0	81	8,070	n/a	623	62,300	100
	91-100	0	0	59	6,036	n/a	762	78,486	103
	101-110	112	11,404	185	18,890	n/a	899	91,698	102
	111-120	70	6,561	196	18,424	n/a	815	76,610	94
	121-130	35	2,318	46	3,095	n/a	207	13,869	67
	131-140	0	0	89	4,014	n/a	277	12,465	45
	141-150	0	0	0	0	n/a	0	0	24
	151-160	0	0	0	0	n/a	0	0	20
	161-170	0	0	0	0	n/a	0	0	19
	171-180	0	0	0	0	n/a	0	0	18
	181-190	0	0	0	0	n/a	0	0	16
	191-200	0	0	0	0	n/a	0	0	15
		255	**20,798**	**898**	**72,942**		**7,559**	**489,709**	
LC1	b&s	0	0	0	0	n/a	728	0	0
	1-10	0	0	3	0	n/a	1	0	0
	11-20	7	0	47	0	n/a	0	0	0
	21-30	0	0	0	0	n/a	0	0	0
	31-40	0	0	0	0	n/a	0	0	0
	41-50	0	0	0	0	n/a	26	26	1
	51-60	0	0	0	0	n/a	18	108	6
	61-70	43	1,345	0	0	n/a	0	0	31
	71-80	81	0	16	837	n/a	112	5,824	52
	81-90	36	2,506	57	3,955	n/a	175	12,250	70
	91-100	111	9,341	90	7,526	n/a	491	41,244	84
	101-110	101	9,182	203	18,446	n/a	991	90,181	91
	111-120	925	84,130	581	52,835	n/a	2267	206,297	91
	121-130	198	16,856	458	38,913	n/a	2366	201,110	85
	131-140	321	25,383	581	45,875	n/a	2266	179,014	79
	141-150	54	4,020	296	22,223	n/a	938	70,350	75
	151-160	44	3,043	54	3,726	n/a	217	14,973	69
	161-170	13	819	18	1,146	n/a	126	8,064	64
	171-180	0	0	28	1,650	n/a	53	3,180	60
	181-190	0	0	0	0	n/a	0	0	56
	191-200	0	0	0	0	n/a	0	0	53
		1934	**156,624**	**2429**	**197,131**		**10,775**	**832,621**	

Table 5: continued

For the 2001 to 2006 planning period

Forest Unit	Age Class	Protection Forest		Production Forest					
		Unavailable		Unavailable		Stage of Manage	Available		Yield
		(ha)	(m^3)	(ha)	(m^3)		(ha)	(m^3)	m3/ha
MW1	b&s	0	0	0	0	n/a	0	0	0
	1-10	0	0	0	0	n/a	0	0	0
	11-20	65	258	0	0	n/a	0	0	4
	21-30	0	0	0	0	n/a	7	119	17
	31-40	0	0	33	1,494	n/a	829	37,305	45
	41-50	0	0	31	2,160	n/a	357	24,633	69
	51-60	0	0	30	2,748	n/a	213	19,383	91
	61-70	0	0	39	4,428	n/a	469	53,935	115
	71-80	0	0	610	79,287	n/a	4642	603,460	130
	81-90	12	1,730	305	43,601	n/a	2352	336,336	143
	91-100	82	12,195	409	60,547	n/a	2114	312,872	148
	101-110	0	0	453	67,467	n/a	1756	261,644	149
	111-120	0	0	284	39,532	n/a	1003	139,417	139
	121-130	0	0	70	7,080	n/a	167	16,867	101
	131-140	0	0	146	9,344	n/a	469	30,016	64
	141-150	0	0	89	2,478	n/a	163	4,564	28
	151-160	0	0	45	986	n/a	30	660	22
	161-170	0	0	0	0	n/a	0	0	19
	171-180	0	0	0	0	n/a	0	0	17
	181-190	0	0	0	0	n/a	0	0	16
	191-200	0	0	0	0	n/a	0	0	15
		159	**14,184**	**2544**	**321,150**		**14,571**	**1,841,211**	
MW2	b&s	0	0	0	0	n/a	0	0	0
	1-10	0	0	0	0	n/a	0	0	0
	11-20	0	0	2	0	n/a	236	0	0
	21-30	0	0	0	0	n/a	111	888	8
	31-40	0	0	26	705	n/a	269	7,263	27
	41-50	0	0	26	1,274	n/a	524	25,676	49
	51-60	48	3,434	120	8,618	n/a	1924	138,528	72
	61-70	29	2,784	104	9,955	n/a	637	61,152	96
	71-80	0	0	371	41,126	n/a	2392	265,512	111
	81-90	21	0	418	51,353	n/a	1322	162,606	123
	91-100	171	0	837	108,823	n/a	2473	321,490	130
	101-110	146	0	893	119,635	n/a	3384	453,456	134
	111-120	104	13,416	1812	233,774	n/a	4122	531,738	129
	121-130	125	12,520	1721	172,080	n/a	3287	328,700	100
	131-140	15	1,080	1657	119,282	n/a	1871	134,712	72
	141-150	0	0	271	15,458	n/a	779	44,403	57
	151-160	0	0	110	5,060	n/a	325	14,950	46
	161-170	0	0	110	4,739	n/a	139	5,977	43
	171-180	0	0	0	0	n/a	0	0	41
	181-190	0	0	0	0	n/a	0	0	39
	191-200	0	0	0	0	n/a	0	0	38
		660	**33,234**	**8476**	**891,882**		**23,795**	**2,497,051**	

Table 5: continued

For the 2001 to 2006 planning period

Forest Unit	Age Class	Protection Forest		Production Forest					
		Unavailable		Unavailable		Stage of Manage	Available		Yield
		(ha)	(m³)	(ha)	(m³)		(ha)	(m³)	m3/ha
PJ1	b&s	0	0	0	0	n/a	5505	0	0
	1-10	4	0	11	0	n/a	34	0	0
	11-20	1	1	45	45	n/a	831	261	1
	21-30	0	0	0	0	n/a	261	7,360	16
	31-40	7	290	34	1,505	n/a	460	2,728	44
	41-50	0	0	1	78	n/a	62	22,152	71
	51-60	0	0	68	6,364	n/a	312	43,146	94
	61-70	35	4,071	69	8,154	n/a	459	662,570	118
	71-80	180	25,394	812	114,422	n/a	5615	214,461	141
	81-90	12	1,908	230	36,538	n/a	1521	266,643	159
	91-100	0	0	362	60,866	n/a	1677	110,376	168
	101-110	0	0	171	29,224	n/a	657	75,411	171
	111-120	0	0	156	23,029	n/a	441	0	148
	121-130	0	0	0	0	n/a	0	0	98
	131-140	0	0	31	1,413	n/a	56	2,520	45
	141-150	0	0	0	0	n/a	42	882	21
	151-160	0	0	38	575	n/a	0	0	15
	161-170	0	0	2	32	n/a	0	0	14
	171-180	0	0	0	0	n/a	0	0	13
	181-190	0	0	0	0	n/a	0	0	12
	191-200	0	0	9	97	n/a	0	0	11
		237	**31,664**	**2040**	**282,341**		**17,933**	**1,408,510**	
PJ2	b&s	0	0	0	0	n/a	0	0	0
	1-10	0	0	0	0	n/a	0	0	0
	11-20	0	0	0	0	n/a	0	0	0
	21-30	0	0	0	0	n/a	116	1,508	13
	31-40	0	0	33	1,235	n/a	394	14,972	38
	41-50	0	0	9	549	n/a	100	6,100	61
	51-60	61	5,018	18	1,509	n/a	235	19,270	82
	61-70	0	0	68	7,456	n/a	521	56,789	109
	71-80	7	938	577	77,278	n/a	5091	682,194	134
	81-90	17	2,586	418	63,908	n/a	1685	257,805	153
	91-100	0	0	412	65,984	n/a	2237	357,920	160
	101-110	0	0	303	49,725	n/a	705	115,620	164
	111-120	0	0	226	32,106	n/a	612	86,[illegible]04	142
	121-130	0	0	40	4,060	n/a	173	17,473	101
	131-140	0	0	43	2,387	n/a	165	9,075	55
	141-150	0	0	36	1,343	n/a	130	4,810	37
	151-160	0	0	65	2,000	n/a	0	0	31
	161-170	0	0	0	0	n/a	0	0	29
	171-180	0	0	0	8	n/a	0	0	27
	181-190	0	0	0	5	n/a	0	0	25
	191-200	0	0	0	0	n/a	0	0	22
		85	**8,542**	**2249**	**309,552**		**12,164**	**1,630,440**	

Table 5: continued

For the 2001 to 2006 planning period

		Protection Forest		Production Forest					
Forest Unit	Age Class	Unavailable		Unavailable		Stage of Manage	Available		Yield
		(ha)	(m^3)	(ha)	(m^3)		(ha)	(m^3)	m3/ha
PO1	b&s	0	0	0	0	n/a	18102	0	0
	1-10	0	0	38	0	n/a	49	0	0
	11-20	0	0	188	0	n/a	0	0	0
	21-30	0	0	46	1,138	n/a	891	22,283	25
	31-40	0	0	49	3,500	n/a	1504	106,784	71
	41-50	0	0	55	5,918	n/a	294	31,752	108
	51-60	0	0	35	4,620	n/a	665	87,780	132
	61-70	0	0	71	10,787	n/a	649	99,297	153
	71-80	0	0	1322	223,452	n/a	13917	2,351,973	169
	81-90	17	2,973	668	118,922	n/a	3366	599,148	178
	91-100	0	0	890	161,998	n/a	6654	1,211,028	182
	101-110	0	0	1799	327,491	n/a	5736	1,043,952	182
	111-120	0	0	414	70,295	n/a	1816	308,720	170
	121-130	0	0	268	25,489	n/a	776	73,720	95
	131-140	0	0	567	17,583	n/a	531	16,461	31
	141-150	0	0	61	1,040	n/a	77	1,309	17
	151-160	0	0	10	133	n/a	0	0	13
	161-170	0	0	0	0	n/a	0	0	11
	171-180	0	0	0	0	n/a	0	0	11
	181-190	0	0	0	0	n/a	0	0	10
	191-200	0	0	0	0	n/a	0	0	8
		17	**2,973**	**6482**	**972,365**		**55,027**	**5,954,207**	
SB1	b&s	0	0	0	0	n/a	35485	0	0
	1-10	0	0	114	0	n/a	113	0	0
	11-20	0	0	506	0	n/a	7427	0	0
	21-30	0	0	31	31	n/a	496	496	1
	31-40	0	0	140	2,375	n/a	267	4,539	17
	41-50	0	0	10	343	n/a	85	2,805	33
	51-60	0	0	110	5,945	n/a	201	10,854	54
	61-70	0	0	48	4,032	n/a	682	57,288	84
	71-80	0	0	371	40,428	n/a	2238	243,942	109
	81-90	0	0	175	22,037	n/a	854	107,604	126
	91-100	0	0	561	75,708	n/a	2715	366,525	135
	101-110	8	1,069	670	91,722	n/a	4061	556,357	137
	111-120	0	0	1594	216,811	n/a	6031	820,216	136
	121-130	9	1,105	1527	198,445	n/a	8411	1,093,430	130
	131-140	0	0	3268	401,964	n/a	11109	1,366,407	123
	141-150	0	0	1854	218,760	n/a	5744	677,792	118
	151-160	0	0	332	36,852	n/a	1260	139,860	111
	161-170	0	0	95	10,112	n/a	427	45,262	106
	171-180	0	0	23	2,287	n/a	46	4,554	99
	181-190	0	0	24	2,204	n/a	1	93	93
	191-200	0	0	9	740	n/a	12	1,044	87
		16	**2,174**	**11461**	**1,330,797**		**90,445**	**5,499,068**	

Table 5: continued

For the 2001 to 2006 planning period

Forest Unit	Age Class	Protection Forest		Production Forest					
		Unavailable		Unavailable		Stage of Manage	Available		Yield
		(ha)	(m^3)	(ha)	(m^3)		(ha)	(m^3)	m3/ha
SF1	b&s	0	0	0	0	n/a	6592	0	0
	1-10	1	0	47	0	n/a	52	0	0
	11-20	0	0	50	0	n/a	4173	0	0
	21-30	0	0	0	0	n/a	781	5,467	7
	31-40	0	0	8	218	n/a	62	1,736	28
	41-50	35	1,876	78	4,145	n/a	285	15,105	53
	51-60	0	0	311	24,258	n/a	2208	172,224	78
	61-70	0	0	194	18,847	n/a	1057	102,529	97
	71-80	66	7,544	576	66,240	n/a	1005	115,575	115
	81-90	0	0	784	101,110	n/a	1183	152,607	129
	91-100	39	5,398	653	89,393	n/a	1408	192,896	137
	101-110	0	0	418	59,313	n/a	1398	198,516	142
	111-120	23	2,941	1241	160,076	n/a	1855	239,295	129
	121-130	0	0	656	68,880	n/a	1779	186,795	105
	131-140	0	0	948	82,467	n/a	1725	150,075	87
	141-150	0	0	253	19,443	n/a	752	57,904	77
	151-160	0	0	106	7,716	n/a	105	7,665	73
	161-170	0	0	48	3,353	n/a	130	9,100	70
	171-180	0	0	28	1,918	n/a	20	1,360	68
	181-190	0	0	0	0	n/a	0	0	65
	191-200	0	0	0	0	n/a	0	0	63
		164	**17,759**	**6398**	**707,377**		**26,570**	**1,608,849**	
SP1	b&s	0	0	0	0	n/a	0	0	0
	1-10	0	0	0	0	n/a	0	0	0
	11-20	0	0	0	0	n/a	164	0	0
	21-30	0	0	0	3	n/a	132	1,452	11
	31-40	0	0	1	33	n/a	96	3,168	33
	41-50	0	0	12	683	n/a	191	10,696	56
	51-60	0	0	26	1,997	n/a	227	17,706	78
	61-70	0	0	14	1,512	n/a	276	28,980	105
	71-80	47	5,978	243	31,091	n/a	1853	237,184	128
	81-90	66	9,381	208	29,673	n/a	1059	151,437	143
	91-100	0	0	215	32,650	n/a	1347	204,744	152
	101-110	0	0	306	47,186	n/a	1006	154,924	154
	111-120	0	0	456	63,868	n/a	1486	208,040	140
	121-130	0	0	506	59,755	n/a	993	117,174	118
	131-140	0	0	452	41,566	n/a	1491	137,172	92
	141-150	0	0	128	10,344	n/a	693	56,133	81
	151-160	0	0	2	137	n/a	33	2,508	76
	161-170	0	0	34	2,366	n/a	83	5,810	70
	171-180	0	0	0	0	n/a	0	0	66
	181-190	0	0	0	0	n/a	0	0	63
	191-200	0	0	0	0	n/a	0	0	59
		112	**15,358**	**2603**	**322,863**		**11,130**	**1,337,128**	

Table 5: continued

For the 2001 to 2006 planning period

Forest Unit	Age Class	Protection Forest		Production Forest					
		Unavailable		Unavailable		Stage of Manage	Available		Yield
		(ha)	(m^3)	(ha)	(m^3)		(ha)	(m^3)	m3/ha
SB3	b&s	0	0	0	0	n/a	4462	0	0
	1-10	46	0	12	0	n/a	12	0	0
	11-20	23	0	294	0	n/a	37	0	0
	21-30	0	0	3	0	n/a	5	0	0
	31-40	15	0	0	0	n/a	0	0	0
	41-50	21	0	12	0	n/a	194	0	0
	51-60	7	7	7	7	n/a	87	87	1
	61-70	290	290	48	48	n/a	570	570	1
	71-80	1616	11,312	315	2,206	n/a	2320	16,240	7
	81-90	165	6,757	47	1,939	n/a	345	14,145	41
	91-100	438	31,945	265	19,330	n/a	1497	109,281	73
	101-110	739	57,650	247	19,282	n/a	1367	106,626	78
	111-120	1426	108,391	449	34,094	n/a	2270	172,520	76
	121-130	1439	105,011	373	27,200	n/a	2662	194,326	73
	131-140	3587	251,076	1555	108,836	n/a	5891	412,370	70
	141-150	1570	105,197	349	23,370	n/a	1152	77,184	67
	151-160	133	8,240	32	1,959	n/a	200	12,400	62
	161-170	84	4,866	13	760	n/a	15	870	58
	171-180	0	0	11	594	n/a	75	3,975	53
	181-190	0	0	0	0	n/a	0	0	49
	191-200	0	0	0	0	n/a	18	792	44
		11599	**690,741**	**4032**	**239,625**		**23,180**	**1,121,386**	
PO3	b&s	0	0	0	0	n/a	1355	0	0
	1-10	0	0	15	0	n/a	14	0	0
	11-20	0	0	80	0	n/a	209	0	0
	21-30	0	0	0	0	n/a	49	98	2
	31-40	0	0	2	53	n/a	252	8,316	33
	41-50	0	0	0	0	n/a	50	3,900	78
	51-60	0	0	5	540	n/a	61	6,100	100
	61-70	0	0	82	9,547	n/a	399	46,284	116
	71-80	0	0	552	68,448	n/a	6741	835,884	124
	81-90	0	0	611	81,861	n/a	2070	277,380	134
	91-100	10	1,315	207	28,345	n/a	2509	343,733	137
	101-110	94	12,650	153	20,615	n/a	540	72,900	135
	111-120	0	0	81	9,919	n/a	508	61,976	122
	121-130	0	0	25	1,854	n/a	27	1,971	73
	131-140	0	0	0	0	n/a	0	0	26
	141-150	0	0	0	0	n/a	0	0	13
	151-160	0	0	0	0	n/a	0	0	9
	161-170	0	0	0	0	n/a	0	0	7
	171-180	0	0	0	2	n/a	0	0	7
	181-190	0	0	0	0	n/a	0	0	7
	191-200	0	0	0	0	n/a	0	0	6
		103	**13,965**	**1814**	**221,183**		**14,784**	**1,658,542**	

Table 5: continued

For the 2001 to 2006 planning period

Forest Unit	Age Class	Protection Forest		Production Forest					
		Unavailable		Unavailable		Stage of Manage	Available		Yield
		(ha)	(m^3)	(ha)	(m^3)		(ha)	(m^3)	m3/ha
All FUs	b&s	0	0	0	0	n/a	74204	0	na
	1-10	51	0	247	0	n/a	298	0	na
	11-20	95	259	1252	45	n/a	13132	261	na
	21-30	0	0	80	1.172	n/a	2849	39.671	na
	31-40	22	290	328	11.184	n/a	4165	187.515	na
	41-50	57	1.876	237	15.232	n/a	2267	146.706	na
	51-60	125	8.975	809	61.025	n/a	6467	532.882	na
	61-70	397	8.491	747	75.458	n/a	5789	1.174.784	na
	71-80	2.027	51.166	5866	753.968	n/a	47333	5.698.879	na
	81-90	345	27.840	4000	562.966	n/a	16555	2.400.261	na
	91-100	852	60.194	4959	717.206	n/a	25884	3.650.595	na
	101-110	1.199	91.953	5801	868.995	n/a	22500	3.221.285	na
	111-120	2.547	215.439	7490	954.762	n/a	23226	2.851.733	na
	121-130	1.805	137.809	5690	606.851	n/a	20848	2.245.435	na
	131-140	3.923	277.539	9337	834.732	n/a	25851	2.450.287	na
	141-150	1.624	109.217	3336	314.458	n/a	10470	995.331	na
	151-160	177	11.283	793	59.142	n/a	2170	193.016	na
	161-170	97	5.685	321	22.508	n/a	920	75.083	na
	171-180	0	0	91	6.458	n/a	194	13.069	na
	181-190	0	0	24	2.209	n/a	1	93	na
	191-200	0	0	17	836	n/a	30	1.836	na
All FUs		**15.342**	**1.008.016**	**51.424**	**5.869.207**		**305.153**	**25.878.722**	

Table 5: continued

For the 2006 to 2011 planning period

Forest Unit	Age Class	Protection Forest		Production Forest						Unmanaged Production Forest	
			Unavailable (reserved)			Stage of	Available		Yield*	Unavail (Parks/OLL)	
		(ha)	(m^3)	(ha)	(m^3)	Manage	(ha)	(m^3)	m3/ha	(ha)	(m^3)
Bog	b&s	0.0	0	0.0	0	n/a	0.0	0	0	0.0	0.0
	1-10	0.0	0	0.0	0	n/a	0.0	0	0	0.0	0.0
	11-20	21.5	0	0.0	0	n/a	0.0	0	0	0.0	0.0
	21-30	0.0	0	0.0	0	n/a	0.0	0	0	0.0	0.0
	31-40	15.4	0	0.0	0	n/a	0.0	0	0	0.0	0.0
	41-50	0.0	0	0.0	0	n/a	0.0	0	0	0.0	0.0
	51-60	21.1	0	0.0	0	n/a	0.0	0	0	0.0	0.0
	61-70	52.1	0	0.0	0	n/a	0.0	0	0	0.0	0.0
	71-80	1,216.6	4,866	0.0	0	n/a	0.0	0	4	0.0	0.0
	81-90	852.1	23,007	0.0	0	n/a	0.0	0	27	0.0	0.0
	91-100	633.3	31,032	0.0	0	n/a	0.0	0	49	0.0	0.0
	101-110	812.9	42,271	0.0	0	n/a	0.0	0	52	0.0	0.0
	111-120	2,187.6	113,755	0.0	0	n/a	0.0	0	52	100.5	5,226.0
	121-130	1,480.5	75,506	0.0	0	n/a	0.0	0	51	14.6	744.6
	131-140	3,542.7	170,050	0.0	0	n/a	0.0	0	48	114.9	5,515.2
	141-150	1,581.0	72,726	0.0	0	n/a	0.0	0	46	68.8	3,164.8
	151-160	195.6	8,411	0.0	0	n/a	0.0	0	43	0.0	0.0
	161-170	103.3	4,132	0.0	0	n/a	0.0	0	40	0.0	0.0
	171-180	0.0	0	0.0	0	n/a	0.0	0	37	0.0	0.0
	181-190	0.0	0	0.0	0	n/a	0.0	0	34	0.0	0.0
	191-200	0.0	0	0.0	0	n/a	0.0	0	30	0.0	0.0
	201+	0.0	0	0.0	0	n/a	0.0	0	26	0.0	0.0
Subtotal		**12,715.7**	**545,755**	**0.0**	**0**		**0.0**	**0**		**298.8**	**14,650.6**
Prl	b&s	0.0	0	0.0	0	n/a	0.0	0	0	0.0	0.0
	1-10	0.0	0	0.0	0	n/a	0.0	0	0	0.0	0.0
	11-20	0.0	0	0.0	0	n/a	0.0	0	0	0.0	0.0
	21-30	0.0	0	0.0	0	n/a	0.0	0	24	0.0	0.0
	31-40	0.0	0	0.0	0	n/a	7.5	623	83	0.0	0.0
	41-50	0.0	0	0.0	0	n/a	0.0	0	132	0.0	0.0
	51-60	0.0	0	0.0	0	n/a	0.0	0	170	0.0	0.0
	61-70	0.0	0	0.0	0	n/a	0.0	0	200	0.0	0.0
	71-80	0.0	0	0.0	0	n/a	0.0	0	220	0.0	0.0
	81-90	0.0	0	0.0	0	n/a	0.0	0	234	0.0	0.0
	91-100	0.0	0	0.0	0	n/a	0.0	0	241	0.0	0.0
	101-110	0.0	0	0.0	0	n/a	0.0	0	244	0.0	0.0
	111-120	0.0	0	0.0	0	n/a	0.0	0	244	0.0	0.0
	121-130	0.0	0	0.0	0	n/a	0.0	0	244	0.0	0.0
	131-140	0.0	0	0.0	0	n/a	0.0	0	244	0.0	0.0
	141-150	0.0	0	0.0	0	n/a	0.0	0	244	0.0	0.0
	151-160	0.0	0	0.0	0	n/a	0.0	0	244	0.0	0.0
	161-170	0.0	0	0.0	0	n/a	0.0	0	244	0.0	0.0
	171-180	0.0	0	0.0	0	n/a	0.0	0	244	0.0	0.0
	181-190	0.0	0	0.0	0	n/a	0.0	0	244	0.0	0.0
	191-200	0.0	0	0.0	0	n/a	0.0	0	244	0.0	0.0
	201+	0.0	0	0.0	0	n/a	0.0	0	244	0.0	0.0
Subtotal		**0.0**	**0**	**0.0**	**0**		**7.5**	**623**		**0.0**	**0.0**

Table 5: continued

Forest Unit	Age Class	Protection Forest		Production Forest						Unmanaged Production Forest	
			Unavailable (reserved)			Stage of Manage	Available		Yield*	Unavail (Parks/OLL)	
		(ha)	(m^3)	(ha)	(m^3)		(ha)	(m^3)	m3/ha	(ha)	(m^3)
Sb1	b&s	0.0	0	0.0	0	n/a	475.9	0	0	0.0	0.0
	1-10	0.0	0	35.2	0	n/a	2,201.4	0	0	0.0	0.0
	11-20	0.0	0	413.9	0	n/a	8,086.5	0	0	23.1	0.0
	21-30	0.0	0	168.2	673	n/a	6,085.6	24,342	4	0.0	0.0
	31-40	0.0	0	6.5	208	n/a	39.1	1,251	32	0.0	0.0
	41-50	0.0	0	1.1	74	n/a	20.9	1,400	67	0.0	0.0
	51-60	0.0	0	0.0	0	n/a	24.1	2,434	101	0.0	0.0
	61-70	0.0	0	3.7	455	n/a	33.3	4,096	123	0.0	0.0
	71-80	0.0	0	17.4	2,488	n/a	495.5	70,857	143	0.0	0.0
	81-90	0.0	0	30.7	4,789	n/a	273.8	42,713	156	0.0	0.0
	91-100	0.0	0	117.9	19,218	n/a	818.0	133,334	163	35.9	5,851.7
	101-110	0.0	0	192.6	31,972	n/a	1,198.2	198,903	166	0.0	0.0
	111-120	0.0	0	140.0	22,540	n/a	943.0	151,823	161	0.0	0.0
	121-130	0.0	0	143.0	22,308	n/a	884.8	138,029	156	0.0	0.0
	131-140	0.0	0	694.5	102,092	n/a	2,318.3	340,795	147	0.0	0.0
	141-150	0.0	0	421.0	58,519	n/a	1,004.3	139,598	139	0.0	0.0
	151-160	0.0	0	164.9	21,932	n/a	580.0	77,140	133	0.0	0.0
	161-170	0.0	0	77.6	9,933	n/a	328.5	42,048	128	0.0	0.0
	171-180	0.0	0	4.0	488	n/a	24.5	2,989	122	0.0	0.0
	181-190	0.0	0	0.0	0	n/a	0.0	0	117	0.0	0.0
	191-200	0.0	0	24.0	2,640	n/a	0.0	0	110	0.0	0.0
	201+	0.0	0	0.0	0	n/a	0.0	0	105	0.0	0.0
Subtotal		**0.0**	**0**	**2,656.2**	**300,327**		**25,835.7**	**1,371,751**		**59.0**	**5,851.7**
Sb3	b&s	0.0	0	0.0	0	n/a	2,285.9	0	0	0.0	0.0
	1-10	0.0	0	100.6	0	n/a	4,516.9	0	0	0.0	0.0
	11-20	0.0	0	647.5	0	n/a	5,117.5	0	0	66.3	0.0
	21-30	0.0	0	177.4	0	n/a	3,068.1	0	0	0.0	0.0
	31-40	0.0	0	108.2	108	n/a	3,615.9	3,616	1	16.9	16.9
	41-50	0.0	0	58.2	116	n/a	1,103.2	2,206	2	129.8	259.6
	51-60	0.0	0	68.8	275	n/a	354.4	1,418	4	0.0	0.0
	61-70	0.0	0	49.5	1,238	n/a	208.4	5,210	25	0.0	0.0
	71-80	0.0	0	335.1	15,080	n/a	3,048.5	137,180	45	0.0	0.0
	81-90	0.0	0	219.6	16,250	n/a	2,009.7	148,718	74	1.4	103.6
	91-100	0.0	0	431.3	41,405	n/a	3,359.9	322,548	96	113.9	10,934.4
	101-110	7.8	772	631.6	62,528	n/a	4,433.6	438,922	99	12.2	1,207.8
	111-120	0.0	0	1,056.4	102,471	n/a	7,337.2	711,708	97	254.0	24,638.0
	121-130	50.1	4,709	1,413.9	132,907	n/a	9,887.1	929,387	94	172.8	16,243.2
	131-140	0.0	0	2,700.6	237,653	n/a	15,578.6	1,370,918	88	580.8	51,110.4
	141-150	0.0	0	1,123.1	95,464	n/a	6,050.7	514,305	85	302.0	25,670.0
	151-160	0.0	0	245.7	19,656	n/a	1,897.8	151,826	80	189.7	15,176.0
	161-170	0.0	0	68.0	5,032	n/a	299.1	22,133	74	0.0	0.0
	171-180	0.0	0	16.9	1,132	n/a	117.1	7,845	67	0.0	0.0
	181-190	0.0	0	0.0	0	n/a	0.0	0	61	0.0	0.0
	191-200	0.0	0	5.7	314	n/a	12.6	693	55	0.0	0.0
	201+	0.0	0	8.1	397	n/a	12.4	608	49	0.0	0.0
Subtotal		**57.9**	**5,482**	**9,466.2**	**732,025**		**74,314.4**	**4,769,243**		**1,839.8**	**145,359.9**

Table 5: continued

Forest Unit	Age Class	Protection Forest		Production Forest						Unmanaged Production Forest	
			Unavailable (reserved)			Stage of	Available		Yield*	Unavail (Parks/OLL)	
		(ha)	(m^3)	(ha)	(m^3)	Manage	(ha)	(m^3)	m3/ha	(ha)	(m^3)
Pj1	b&s	0.0	0	0.0	0	n/a	79.5	0	0	0.0	0.0
	1-10	0.0	0	77.7	0	n/a	1,968.3	0	0	0.0	0.0
	11-20	0.0	0	66.1	66	n/a	3,415.4	3,415	1	0.0	0.0
	21-30	0.0	0	13.8	221	n/a	852.0	13,632	16	0.0	0.0
	31-40	0.0	0	24.4	1,074	n/a	703.8	30,967	44	0.0	0.0
	41-50	0.0	0	1.5	107	n/a	93.7	6,653	71	0.0	0.0
	51-60	0.0	0	15.0	1,440	n/a	115.6	11,098	96	34.1	3,273.6
	61-70	0.0	0	6.7	791	n/a	226.3	26,703	118	0.0	0.0
	71-80	10.8	1,534	145.4	20,647	n/a	2,072.6	294,313	142	0.0	0.0
	81-90	206.0	33,166	469.8	75,638	n/a	4,680.1	753,498	161	0.0	0.0
	91-100	11.4	1,927	287.7	48,621	n/a	2,029.1	342,918	169	0.0	0.0
	101-110	0.0	0	303.9	52,271	n/a	777.4	133,716	172	0.0	0.0
	111-120	0.0	0	126.7	18,625	n/a	375.3	55,168	147	0.0	0.0
	121-130	0.0	0	28.0	2,800	n/a	75.4	7,540	100	0.0	0.0
	131-140	0.0	0	30.2	1,389	n/a	45.6	2,095	46	0.0	0.0
	141-150	0.0	0	0.0	0	n/a	3.4	75	22	0.0	0.0
	151-160	0.0	0	36.7	587	n/a	5.5	88	16	0.0	0.0
	161-170	0.0	0	0.0	0	n/a	0.0	0	15	0.0	0.0
	171-180	0.0	0	2.2	29	n/a	34.8	452	13	0.0	0.0
	181-190	0.0	0	0.0	0	n/a	0.0	0	12	0.0	0.0
	191-200	0.0	0	2.6	29	n/a	0.0	0	11	0.0	0.0
	201+	0.0	0	0.0	0	n/a	0.0	0	10	0.0	0.0
Subtotal		228.2	36,626	1,638.4	224,333		17,553.7	1,682,332		34.1	3,273.6
Lc1	b&s	0.0	0	0.0	0	n/a	15.2	0	0	0.0	0.0
	1-10	0.0	0	10.3	0	n/a	1,063.6	0	0	0.0	0.0
	11-20	0.0	0	51.4	0	n/a	328.0	0	0	15.8	0.0
	21-30	0.0	0	7.1	0	n/a	249.4	0	0	0.0	0.0
	31-40	0.0	0	8.2	8	n/a	133.9	134	1	0.0	0.0
	41-50	0.0	0	1.8	4	n/a	116.7	233	2	0.0	0.0
	51-60	0.0	0	2.5	18	n/a	15.5	109	7	0.0	0.0
	61-70	0.0	0	0.7	23	n/a	11.5	380	33	0.0	0.0
	71-80	4.1	217	6.1	323	n/a	80.6	4,272	53	0.0	0.0
	81-90	0.0	0	23.0	1,633	n/a	134.9	9,578	71	0.0	0.0
	91-100	21.6	1,814	82.9	6,964	n/a	583.6	49,022	84	0.0	0.0
	101-110	19.0	1,729	164.6	14,979	n/a	1,035.6	94,240	91	0.0	0.0
	111-120	74.3	6,613	420.0	37,380	n/a	2,335.9	207,897	89	0.0	0.0
	121-130	124.0	10,540	420.4	35,734	n/a	2,257.9	191,922	85	1.8	153.0
	131-140	219.0	17,301	400.0	31,600	n/a	2,015.7	159,238	79	74.7	5,901.3
	141-150	104.9	7,658	295.9	21,601	n/a	1,109.3	80,980	73	0.0	0.0
	151-160	14.6	993	32.3	2,196	n/a	205.5	13,974	68	0.0	0.0
	161-170	60.1	3,786	44.7	2,816	n/a	94.7	5,966	63	0.0	0.0
	171-180	0.0	0	19.3	1,139	n/a	89.5	5,281	59	0.0	0.0
	181-190	0.0	0	0.0	0	n/a	0.0	0	54	0.0	0.0
	191-200	0.0	0	0.0	0	n/a	0.0	0	52	0.0	0.0
	201+	0.0	0	0.0	0	n/a	0.0	0	47	0.0	0.0
Subtotal		641.6	50,651	1,991.2	156,417		11,877.0	823,225		92.3	6,054.3

Table 5: continued

Forest Unit	Age Class	Protection Forest		Production Forest						Unmanaged Production Forest	
			Unavailable (reserved)			Stage of Manage	Available		Yield*	Unavail (Parks/OLL)	
		(ha)	(m³)	(ha)	(m³)		(ha)	(m³)	m3/ha	(ha)	(m³)
Pj2	b&s	0.0	0	0.0	0	n/a	0.0	0	0	0.0	0.0
	1-10	0.0	0	38.1	0	n/a	2,228.9	0	0	0.0	0.0
	11-20	0.0	0	12.4	0	n/a	794.0	0	0	0.0	0.0
	21-30	0.0	0	63.1	820	n/a	484.8	6,302	13	0.0	0.0
	31-40	0.0	0	41.3	1,611	n/a	790.5	30,830	39	0.0	0.0
	41-50	0.0	0	8.8	546	n/a	116.2	7,204	62	19.9	1,233.8
	51-60	0.0	0	7.6	623	n/a	20.8	1,706	82	0.0	0.0
	61-70	57.1	6,338	8.4	932	n/a	192.8	21,401	111	0.0	0.0
	71-80	0.0	0	162.9	22,317	n/a	2,397.5	328,451	137	0.0	0.0
	81-90	24.4	3,806	360.3	56,207	n/a	4,102.0	639,912	156	12.5	1,950.0
	91-100	0.0	0	297.0	48,708	n/a	2,190.4	359,229	164	0.0	0.0
	101-110	0.0	0	385.2	64,328	n/a	763.5	127,503	167	0.0	0.0
	111-120	0.0	0	297.5	43,435	n/a	632.9	92,408	146	0.0	0.0
	121-130	0.0	0	53.2	5,480	n/a	217.6	22,411	103	0.0	0.0
	131-140	0.0	0	54.8	3,178	n/a	201.4	11,684	58	0.0	0.0
	141-150	0.0	0	39.0	1,482	n/a	54.2	2,060	38	0.0	0.0
	151-160	0.0	0	67.9	2,241	n/a	29.7	980	33	0.0	0.0
	161-170	0.0	0	0.0	0	n/a	0.0	0	31	0.0	0.0
	171-180	0.0	0	0.0	0	n/a	0.0	0	28	0.0	0.0
	181-190	0.0	0	0.0	0	n/a	0.0	0	26	0.0	0.0
	191-200	0.0	0	0.0	0	n/a	46.1	1,106	24	0.0	0.0
	201+	0.0	0	0.0	0	n/a	0.0	0	21	0.0	0.0
Subtotal		**81.5**	**10,145**	**1,897.5**	**251,908**		**15,263.3**	**1,653,185**		**32.4**	**3,183.8**
Sp1	b&s	0.0	0	0.0	0	n/a	0.0	0	0	0.0	0.0
	1-10	0.0	0	79.5	0	n/a	2,447.0	0	0	0.0	0.0
	11-20	0.0	0	8.8	0	n/a	867.8	0	0	0.0	0.0
	21-30	0.0	0	22.9	229	n/a	919.7	9,197	10	0.0	0.0
	31-40	0.0	0	26.7	854	n/a	629.9	20,157	32	0.0	0.0
	41-50	0.0	0	2.2	119	n/a	143.7	7,760	54	0.0	0.0
	51-60	0.0	0	22.1	1,768	n/a	242.8	19,424	80	0.0	0.0
	61-70	0.0	0	25.9	2,745	n/a	333.1	35,309	106	0.0	0.0
	71-80	0.0	0	78.7	10,231	n/a	1,179.1	153,283	130	0.0	0.0
	81-90	112.3	16,396	274.4	40,062	n/a	2,398.9	350,242	146	0.0	0.0
	91-100	0.0	0	150.8	23,223	n/a	1,481.5	228,143	154	0.0	0.0
	101-110	0.0	0	223.7	34,897	n/a	1,037.4	161,828	156	0.0	0.0
	111-120	0.0	0	543.4	78,793	n/a	1,505.1	218,235	145	0.0	0.0
	121-130	0.0	0	451.4	54,168	n/a	871.6	104,587	120	0.0	0.0
	131-140	0.0	0	267.6	25,690	n/a	1,414.6	135,804	96	0.0	0.0
	141-150	0.0	0	215.4	18,309	n/a	961.6	81,733	85	0.0	0.0
	151-160	0.0	0	3.6	284	n/a	5.2	411	79	0.0	0.0
	161-170	0.0	0	24.5	1,838	n/a	17.4	1,305	75	0.0	0.0
	171-180	0.0	0	5.8	412	n/a	74.8	5,311	71	0.0	0.0
	181-190	0.0	0	0.0	0	n/a	0.0	0	66	0.0	0.0
	191-200	0.0	0	0.0	0	n/a	0.0	0	62	0.0	0.0
	201+	0.0	0	0.0	0	n/a	0.0	0	58	0.0	0.0
Subtotal		**112.3**	**16,396**	**2,427.4**	**293,623**		**16,531.1**	**1,532,729**		**0.0**	**0.0**

Table 5: continued

Forest Unit	Age Class	Protection Forest		Production Forest						Unmanaged Production Forest	
			Unavailable (reserved)			Stage of	Available		Yield*	Unavail (Parks/OLL)	
		(ha)	(m³)	(ha)	(m³)	Manage	(ha)	(m³)	m3/ha	(ha)	(m³)
Sfl	b&s	0.0	0	0.0	0	n/a	109.2	0	0	0.0	0.0
	1-10	0.0	0	81.1	0	n/a	4,116.1	0	0	0.0	0.0
	11-20	0.0	0	116.7	0	n/a	6,028.3	0	0	0.0	0.0
	21-30	0.0	0	160.5	1,284	n/a	6,598.4	52,787	8	0.0	0.0
	31-40	0.0	0	82.9	2,404	n/a	2,721.1	78,912	29	0.0	0.0
	41-50	0.0	0	48.6	2,624	n/a	783.5	42,309	54	0.0	0.0
	51-60	35.3	2,789	71.3	5,633	n/a	793.5	62,688	79	0.0	0.0
	61-70	0.0	0	367.6	37,495	n/a	2,075.5	211,698	102	0.0	0.0
	71-80	35.6	4,130	351.5	40,774	n/a	779.0	90,369	116	0.0	0.0
	81-90	30.0	3,840	500.6	64,077	n/a	1,013.4	129,718	128	47.2	6,041.6
	91-100	48.3	6,569	648.7	88,223	n/a	1,430.1	194,488	136	7.4	1,006.4
	101-110	9.2	1,297	679.4	95,795	n/a	1,289.0	181,743	141	0.0	0.0
	111-120	22.8	2,896	1,159.3	147,231	n/a	2,346.2	297,966	127	0.0	0.0
	121-130	0.0	0	629.7	63,600	n/a	1,575.6	159,136	101	0.0	0.0
	131-140	0.0	0	869.4	69,552	n/a	1,665.7	133,257	80	27.0	2,160.0
	141-150	4.4	308	334.5	23,415	n/a	884.1	61,885	70	0.0	0.0
	151-160	0.0	0	90.2	5,953	n/a	95.1	6,277	66	0.0	0.0
	161-170	0.0	0	73.9	4,656	n/a	167.6	10,559	63	0.0	0.0
	171-180	0.0	0	0.0	0	n/a	0.0	0	61	0.0	0.0
	181-190	0.0	0	29.3	1,699	n/a	19.6	1,137	58	0.0	0.0
	191-200	0.0	0	0.0	0	n/a	0.0	0	56	0.0	0.0
	201+	0.0	0	0.0	0	n/a	0.0	0	55	0.0	0.0
Subtotal		**185.6**	**21,828**	**6,295.2**	**654,416**		**34,490.9**	**1,714,928**		**81.6**	**9,208.0**
Pol	b&s	0.0	0	0.0	0	n/a	25.5	0	0	0.0	0.0
	1-10	0.0	0	31.0	0	n/a	986.0	0	0	0.0	0.0
	11-20	0.0	0	66.6	0	n/a	2,109.9	0	0	0.0	0.0
	21-30	0.0	0	17.8	748	n/a	1,015.9	42,668	42	0.0	0.0
	31-40	0.0	0	14.0	1,204	n/a	502.3	43,198	86	0.0	0.0
	41-50	0.0	0	5.1	648	n/a	168.4	21,387	127	0.0	0.0
	51-60	0.0	0	0.0	0	n/a	49.7	8,300	167	0.0	0.0
	61-70	0.0	0	1.3	256	n/a	33.0	6,501	197	0.0	0.0
	71-80	0.0	0	13.5	2,916	n/a	432.8	93,485	216	0.0	0.0
	81-90	0.0	0	65.9	14,893	n/a	627.2	141,747	226	0.0	0.0
	91-100	0.0	0	19.4	4,481	n/a	213.5	49,314	231	0.0	0.0
	101-110	0.0	0	127.7	29,371	n/a	515.2	118,501	230	0.0	0.0
	111-120	0.0	0	339.1	62,055	n/a	533.5	97,632	183	0.0	0.0
	121-130	0.0	0	29.1	2,823	n/a	181.5	17,606	97	0.0	0.0
	131-140	0.0	0	419.9	14,277	n/a	390.8	13,286	34	0.0	0.0
	141-150	0.0	0	59.1	1,182	n/a	83.1	1,661	20	0.0	0.0
	151-160	0.0	0	5.0	85	n/a	5.3	90	17	0.0	0.0
	161-170	0.0	0	0.0	0	n/a	0.0	0	14	0.0	0.0
	171-180	0.0	0	0.0	0	n/a	0.0	0	14	0.0	0.0
	181-190	0.0	0	0.0	0	n/a	0.0	0	14	0.0	0.0
	191-200	0.0	0	0.0	0	n/a	0.0	0	13	0.0	0.0
	201+	0.0	0	0.0	0	n/a	0.0	0	13	0.0	0.0
Subtotal		**0.0**	**0**	**1,214.5**	**134,939**		**7,873.5**	**655,375**		**0.0**	**0.0**

Table 5: continued

Forest Unit	Age Class	Protection Forest	Production Forest						Yield*	Unmanaged Production Forest	
			Unavailable (reserved)			Stage of Manage	Available			Unavail (Parks/OLL)	
		(ha)	(m³)	(ha)	(m³)		(ha)	(m³)	m3/ha	(ha)	(m³)
Po3	b&s	0.0	0	0.0	0	n/a	442.6	0	0	0.0	0.0
	1-10	0.0	0	119.8	0	n/a	7,789.4	0	0	0.0	0.0
	11-20	0.0	0	342.5	0	n/a	10,664.7	0	0	0.0	0.0
	21-30	0.0	0	69.6	974	n/a	2,666.6	37,332	14	0.0	0.0
	31-40	0.0	0	25.6	1,254	n/a	771.3	37,794	49	0.0	0.0
	41-50	0.0	0	7.2	626	n/a	158.9	13,824	87	0.0	0.0
	51-60	0.0	0	52.2	6,212	n/a	346.9	41,281	119	0.0	0.0
	61-70	0.0	0	58.4	8,468	n/a	566.3	82,114	145	0.0	0.0
	71-80	0.0	0	326.2	52,518	n/a	6,964.1	1,121,215	161	0.0	0.0
	81-90	0.0	0	1,423.7	246,300	n/a	16,283.2	2,816,994	173	55.6	9,618.8
	91-100	16.7	3,006	1,231.7	221,706	n/a	8,265.0	1,487,705	180	0.0	0.0
	101-110	0.0	0	1,733.6	310,314	n/a	5,020.3	898,637	179	0.0	0.0
	111-120	0.0	0	379.7	53,917	n/a	1,621.5	230,253	142	0.0	0.0
	121-130	0.0	0	209.0	16,720	n/a	430.2	34,416	80	22.4	1,792.0
	131-140	0.0	0	160.9	4,505	n/a	131.0	3,667	28	0.0	0.0
	141-150	0.0	0	7.9	119	n/a	14.7	221	15	0.0	0.0
	151-160	0.0	0	0.0	0	n/a	4.2	50	12	0.0	0.0
	161-170	0.0	0	0.0	0	n/a	0.0	0	10	0.0	0.0
	171-180	0.0	0	0.0	0	n/a	0.0	0	10	0.0	0.0
	181-190	0.0	0	0.0	0	n/a	0.0	0	9	0.0	0.0
	191-200	0.0	0	0.0	0	n/a	0.0	0	8	0.0	0.0
	201+	0.0	0	0.0	0	n/a	0.0	0	7	0.0	0.0
Subtotal		16.7	3,006	6,148.0	923,635		62,140.9	6,805,503		78.0	11,410.8
Bw1	b&s	0.0	0	0.0	0	n/a	83.9	0	0	0.0	0.0
	1-10	0.0	0	9.0	0	n/a	813.1	0	0	0.0	0.0
	11-20	0.0	0	26.6	0	n/a	1,851.7	0	0	0.0	0.0
	21-30	0.0	0	0.0	0	n/a	316.0	2,844	9	0.0	0.0
	31-40	0.0	0	0.0	0	n/a	28.6	1,030	36	0.0	0.0
	41-50	0.0	0	10.5	662	n/a	35.7	2,249	63	0.0	0.0
	51-60	9.2	745	0.0	0	n/a	63.8	5,168	81	0.0	0.0
	61-70	0.0	0	19.6	2,019	n/a	336.8	34,690	103	0.0	0.0
	71-80	0.0	0	28.7	3,387	n/a	704.0	83,072	118	0.0	0.0
	81-90	29.8	3,874	146.4	19,032	n/a	1,054.1	137,032	130	0.0	0.0
	91-100	9.6	1,296	39.5	5,333	n/a	997.8	134,700	135	0.0	0.0
	101-110	139.5	18,833	161.7	21,830	n/a	777.9	105,010	135	0.0	0.0
	111-120	136.6	16,529	215.6	26,088	n/a	818.4	99,031	121	0.0	0.0
	121-130	34.6	3,114	58.9	5,301	n/a	201.6	18,145	90	0.0	0.0
	131-140	0.0	0	66.4	3,718	n/a	311.5	17,446	56	0.0	0.0
	141-150	0.0	0	0.0	0	n/a	0.0	0	37	0.0	0.0
	151-160	0.0	0	0.0	0	n/a	0.0	0	25	0.0	0.0
	161-170	0.0	0	0.0	0	n/a	0.0	0	18	0.0	0.0
	171-180	0.0	0	0.0	0	n/a	0.0	0	17	0.0	0.0
	181-190	0.0	0	0.0	0	n/a	0.0	0	16	0.0	0.0
	191-200	0.0	0	0.0	0	n/a	0.0	0	14	0.0	0.0
	201+	0.0	0	0.0	0	n/a	0.0	0	13	0.0	0.0
Subtotal		359.3	44,390	782.9	87,368		8,394.9	640,417		0.0	0.0

Table 5: continued

Forest Unit	Age Class	Protection Forest		Production Forest						Unmanaged Production Forest	
			Unavailable (reserved)			Stage of Manage	Available		Yield*	Unavail (Parks/OLL)	
		(ha)	(m³)	(ha)	(m³)		(ha)	(m³)	m3/ha	(ha)	(m³)
Mw1	b&s	0.0	0	0.0	0	n/a	0.0	0	0	0.0	0.0
	1-10	0.0	0	60.9	0	n/a	2,516.3	0	0	0.0	0.0
	11-20	0.0	0	7.5	0	n/a	391.2	0	0	0.0	0.0
	21-30	0.0	0	20.8	374	n/a	480.6	8,651	18	0.0	0.0
	31-40	0.0	0	29.5	1,564	n/a	648.3	34,360	53	0.0	0.0
	41-50	0.0	0	5.7	473	n/a	13.1	1,087	83	0.0	0.0
	51-60	0.0	0	0.0	0	n/a	3.2	352	110	0.0	0.0
	61-70	0.0	0	24.3	3,378	n/a	209.1	29,065	139	0.0	0.0
	71-80	0.0	0	152.3	24,368	n/a	2,256.5	361,038	160	0.0	0.0
	81-90	12.1	2,118	355.7	62,248	n/a	3,893.3	681,324	175	0.0	0.0
	91-100	64.4	11,785	373.1	68,277	n/a	2,859.7	523,321	183	10.2	1,866.6
	101-110	20.3	3,695	367.6	66,903	n/a	1,282.5	233,410	182	0.0	0.0
	111-120	0.0	0	381.9	57,667	n/a	916.1	138,328	151	0.0	0.0
	121-130	0.0	0	92.7	8,992	n/a	219.0	21,243	97	0.0	0.0
	131-140	0.0	0	143.4	6,023	n/a	468.9	19,695	42	0.0	0.0
	141-150	0.0	0	82.0	2,050	n/a	163.2	4,080	25	0.0	0.0
	151-160	0.0	0	48.9	1,027	n/a	45.2	949	21	0.0	0.0
	161-170	0.0	0	0.0	0	n/a	0.0	0	19	0.0	0.0
	171-180	0.0	0	0.0	0	n/a	0.0	0	18	0.0	0.0
	181-190	0.0	0	0.0	0	n/a	0.0	0	16	0.0	0.0
	191-200	0.0	0	0.0	0	n/a	0.0	0	14	0.0	0.0
	201+	0.0	0	0.0	0	n/a	0.0	0	13	0.0	0.0
Subtotal		**96.8**	**17,597**	**2,146.3**	**303,343**		**16,366.2**	**2,056,904**		**10.2**	**1,866.6**
Mw2	b&s	0.0	0	0.0	0	n/a	0.0	0	0	0.0	0.0
	1-10	0.0	0	188.1	0	n/a	5,646.9	0	0	0.0	0.0
	11-20	0.0	0	32.5	0	n/a	1,715.7	0	0	0.0	0.0
	21-30	0.0	0	13.1	105	n/a	819.5	6,556	8	0.0	0.0
	31-40	0.0	0	22.6	610	n/a	726.3	19,610	27	0.0	0.0
	41-50	0.0	0	2.5	113	n/a	339.0	15,255	45	0.0	0.0
	51-60	26.1	1,540	35.9	2,118	n/a	745.6	43,990	59	0.0	0.0
	61-70	21.1	1,730	82.2	6,740	n/a	1,498.4	122,866	82	0.0	0.0
	71-80	27.7	2,715	101.2	9,918	n/a	1,145.6	112,269	98	0.0	0.0
	81-90	22.9	2,588	405.2	45,788	n/a	2,264.3	255,860	113	2.8	316.4
	91-100	62.8	7,662	452.7	55,229	n/a	2,145.5	261,749	122	27.0	3,294.0
	101-110	193.5	24,188	1,133.1	141,638	n/a	2,823.1	352,881	125	0.0	0.0
	111-120	166.5	18,482	1,714.1	190,265	n/a	3,888.4	431,610	111	0.0	0.0
	121-130	125.1	10,133	1,522.8	123,347	n/a	3,059.7	247,835	81	0.0	0.0
	131-140	15.0	795	1,669.3	88,473	n/a	1,836.0	97,307	53	0.0	0.0
	141-150	0.0	0	356.5	15,330	n/a	683.5	29,392	43	0.0	0.0
	151-160	0.0	0	108.8	4,134	n/a	330.3	12,552	38	0.0	0.0
	161-170	0.0	0	9.9	337	n/a	42.9	1,457	34	0.0	0.0
	171-180	0.0	0	108.5	3,364	n/a	127.5	3,953	31	0.0	0.0
	181-190	0.0	0	0.0	0	n/a	0.0	0	29	0.0	0.0
	191-200	0.0	0	0.0	0	n/a	0.0	0	27	0.0	0.0
	201+	0.0	0	0.0	0	n/a	0.0	0	25	0.0	0.0
Subtotal		**660.7**	**69,831**	**7,959.0**	**687,507**		**29,838.0**	**2,015,143**		**29.8**	**3,610.4**

Table 5: continued

Forest Unit	Age Class	Protection Forest	Production Forest								Unmanaged Production Forest	
			Unavailable (reserved)			Stage of Manage	Available		Yield*		Unavail (Parks/OLL)	
		(ha)	(m³)	(ha)	(m³)		(ha)	(m³)	m3/ha		(ha)	(m³)
Unkn	b&s	434.5	0		0	n/a		0	0		16.9	0.0
	1-10		0		0	n/a		0	0			0.0
	11-20		0		0	n/a		0	0			0.0
	21-30		0			n/a		0				0.0
	31-40		0			n/a		0				0.0
	41-50		0			n/a		0				0.0
	51-60		0			n/a		0				0.0
	61-70		0			n/a		0				0.0
	71-80		0			n/a		0				0.0
	81-90		0			n/a		0				0.0
	91-100		0			n/a		0				0.0
	101-110		0			n/a		0				0.0
	111-120		0			n/a		0				0.0
	121-130		0			n/a		0				0.0
	131-140		0			n/a		0				0.0
	141-150		0			n/a		0				0.0
	151-160		0			n/a		0				0.0
	161-170		0			n/a		0				0.0
	171-180		0		0	n/a		0				0.0
	181-190		0		0	n/a		0				0.0
	191-200		0		0	n/a		0				0.0
	201+		0		0	n/a		0				0.0
Subtotal		**434.5**	**0**	**0.0**	**0**		**0.0**	**0**			**16.9**	**0.0**
All Fus	b&s	434.5	0	0.0	0	n/a	3,517.7	0	n/a	#	16.9	0.0
	1-10	0.0	0	831.3	0	n/a	36,293.8	0	n/a	#	0.0	0.0
	11-20	21.5	0	1,792.5	66	n/a	41,370.6	3,415	n/a	#	105.2	0.0
	21-30	0.0	0	734.3	5,428	n/a	23,556.6	204,312	n/a	#	0.0	0.0
	31-40	15.4	0	389.9	10,899	n/a	11,318.5	302,480	n/a	#	16.9	16.9
	41-50	0.0	0	153.2	6,110	n/a	3,093.0	121,569	n/a	#	149.7	1,493.4
	51-60	91.7	5,074	275.4	18,087	n/a	2,775.9	197,967	n/a	#	34.1	3,273.6
	61-70	130.3	8,068	648.3	64,540	n/a	5,724.4	580,032	n/a	#	0.0	0.0
	71-80	1,294.8	13,462	1,719.0	204,967	n/a	21,555.7	2,849,804	n/a	#	0.0	0.0
	81-90	1,289.6	88,794	4,275.3	646,917	n/a	38,734.9	6,107,335	n/a	#	119.5	18,030.4
	91-100	868.1	65,090	4,132.7	631,388	n/a	26,374.0	4,086,473	n/a	#	194.4	22,953.1
	101-110	1,202.2	92,784	6,104.7	926,826	n/a	20,953.5	3,045,294	n/a	#	12.2	1,207.8
	111-120	2,587.8	158,274	6,773.7	840,467	n/a	23,253.5	2,732,060	n/a	#	354.5	29,864.0
	121-130	1,814.3	104,002	5,052.1	474,178	n/a	19,862.0	1,892,256	n/a	#	211.6	18,932.8
	131-140	3,776.7	188,146	7,477.0	588,149	n/a	26,378.1	2,305,191	n/a	#	797.4	64,686.9
	141-150	1,690.3	80,692	2,934.4	237,469	n/a	11,012.0	915,989	n/a	#	370.8	28,834.8
	151-160	210.2	9,404	804.0	58,096	n/a	3,203.8	264,337	n/a	#	189.7	15,176.0
	161-170	163.4	7,918	298.6	24,611	n/a	950.2	83,469	n/a	#	0.0	0.0
	171-180	0.0	0	156.7	6,563	n/a	468.2	25,830	n/a	#	0.0	0.0
	181-190	0.0	0	29.3	1,699	n/a	19.6	1,137	n/a	#	0.0	0.0
	191-200	0.0	0	32.3	2,982	n/a	58.7	1,799	n/a	#	0.0	0.0
	201+	0.0	0	8.1	397	n/a	12.4	608	n/a	#	0.0	0.0
Total All Fus		**15,590.8**	**821,707**	**44,622.8**	**4,749,840**		**320,487.1**	**25,721,357**			**2,572.9**	**204,469.7**

Source : 2006 Nag Final Planning Inventory

Notes:

1) All Yields based on Nag Available Forest Present Yield Curves, except Pr1 which used Intn1 as no Prsnt

2) FMP-9 has a total of 383,273.59 hectares versus 383,274.28 hectares for FMP2 Crown and Park, which is 0.69 hectares short. This difference is explained by the loss of 0.31 hectares of park area and 0.38 hectares of available and reserved Crown area in FMP-9 due to rounding to one decimal place. FMP1 and FMP-2 rounded to two decimal places.

3) FMP-9 includes a total of 434.5 hectares and 16.9 hectares of Crown and Park protection forest islands that did not have any FRI data. These areas were not included in the SFMM modeling as they would contribute to habitat area when it is not clear what type of forest condition actually exists.

Table 6: Summary of Renewal, Tending and Protection Operations – Planned versus Actual

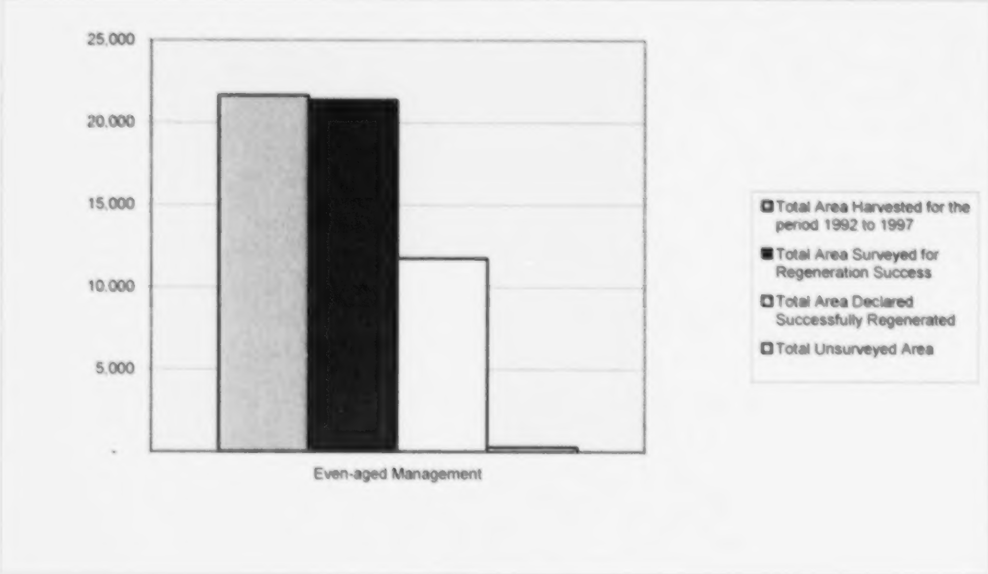
	Area by Planning Period (ha)					
	1997-2002		2001-2006		2006-2011	
	Planned**	Actual*	Planned	Actual	Planned	Actual
Renewal						
Regeneration						
Uneven-Aged Management						
Selection Cut - Harvest						
Total Uneven-Aged Management						
Even-Aged Management						
Natural Regeneration						
Clearcut	6,308	575	9,725	3,699	11,192	
Strip Cut						
Seed Tree Cut						
Uniform Shelterwood Seed Cut						
Subtotal Natural	6,308	575	9,725	3,699	11,192	
Artificial Regeneration						
Planting	5,508	6,089	8,722	8,292	8,030	
Seeding direct						
with site preparation						
Scarification						
Subtotal Artificial	5,508	6,089	8,722	8,292	8,030	
Total Even-Aged Management	11,816	6,664	18,447	11,991	19,222	
Total Regeneration	11,816	6,664	18,447	11,991	19,222	
Site Preparation						
Mechanical	4,860	1,094	1,954	1,225	3,222	
Chemical	0	331	3,585	2,429	869	
Prescribed Burn	592	0	0	0	500	
Total Site Preparation	5,452	1,425	5,539	3,654	4,591	
Tending						
Cleaning						
manual						
chemical - ground	0	14				
- aerial	6,720	14,065	14,961	7,071	10,712	
mechanical						
prescribed burn						
Spacing, pre-commercial thinning, improvement cutting						
even-aged					150	
uneven-aged						
Cultivation						
Total Tending	6,720	14,079	14,961	7,071	10,862	
Protection (Insect Pest Control)						
accelerated harvest		0				
salvage		0				
manual protection		0				
ground insecticide		0				
aerial insecticide		0				
Total Protection		0				

Source: TMPM Table 4.4
FMPM RPFO-7

* Does not include 2001/02 ** Adjusted to 4 years

Table 7: Harvested Area Successfully Regenerated – Summary of All Forest Units

	AREA IN HECTARES (All Forest Units Combined)	***AREA IN HECTARES (All Forest Units Combined)***
	Even-aged Management	**Uneven-aged Management**
Total Area Harvested for the period 1992 to 1997	21,631	-
Total Area Surveyed for Regeneration Success	21,361	-
Total Unsurveyed Area	270	-
Total Area Declared Successfully Regenerated	11,732	-
Total Area Surveyed Not Successfully Regenerated	9,629	-
NSR	6,781	-
B&S	799	-
Not Available for Regen (eg. Roads & landings)	2,049	-
Other	-	-
Percent of Area Surveyed Declared Successfully Regenerated	54.9%	



Source:
TMPM table 4.7
FMPM RPFO - 8 and 9

Appendix B
Audit Team Members and Responsibilities

Audit Team Members and Responsibilities

Name	Role	Responsibilities	Credentials
Rod Seabrook, CEA (SFM), EMS (LA)	Lead Auditor and Wildlife/Ecology Auditor	Overall audit coordination and oversight of activities of the audit team. Review of management objectives, contractual obligations, and forest sustainability. Inspect AOC documentation and practices. Audit aspects of forest management related to environmental protection and wildlife practices.	M.Sc. Biology; 27 years forestry experience in Ontario; auditor on 17 Independent Forest Audits (12 as lead auditor), over 50 ISO 14001 audits, and over 25 sustainable forest management system audits in Canada and the United States.; certified environmental auditor (sustainable forest management) and environmental management system lead auditor.
Liora Zimmerman	Forest Management Planning Auditor	Review of forest management planning requirements and public participation. Assist in assessment of achievement of management objectives and forest sustainability.	M.F.C.; nine years experience in forestry and natural resources management; participated in FMP preparation on four Ontario forests including prescription development, public information centres and plan production.
Brad Chaulk, R.P.F.	Harvesting Operations Auditor	Assess access and harvest planning and implementation. Review compliance program planning and implementation. Assist in assessment of achievement of management objectives and forest sustainability.	15 years of forestry experience including forest management and operational planning; auditor on ten previous Independent Forest Audits.
Laird Van Damme, R.P.F.	Silviculture Operations Auditor	Assess silvicultural planning and operations. Assist in assessment of achievement of management objectives and forest sustainability.	M.Sc.F.; 21 years experience as a practising forester, educator and consultant; primary areas of practice are silviculture, forest management and forest research; forestry auditor and Lead Auditor on 13 previous Independent Forest Audits; attended five-day ISO 14001 EMS Lead Auditor training course.
Keith Hautala	Forest Modelling Auditor	Review SFMM strategic planning. Assist in assessment of achievement of management objectives and forest sustainability.	M.Sc.F.; nine years of forestry experience in Ontario; auditor on five Independent Forest Audits as the modelling auditor, and three Independent Forest Audits as secretariat.
Sonia Colombo	Audit Administration	Coordinate audit logistics.	Dipl. For. Tech.; over 25 years experience in Ontario forestry; specializes in tree seedling production and testing; conference coordination.

Appendix C
Independent Forest Audit Guiding Principles

Independent Forest Audit Guiding Principles

Guiding Principles within the Independent Forest Audit Process and Protocol
1. Commitment
Commitment is reflected in vision, mission and policy statements of the company. Vision and mission statements are intended to provide long-term guidance for the organization. Policy statements reflect how the organization's vision and mission will be achieved. These statements must be reflected in the day-to-day operations of the organization.
2. Public Participation
The process of sustainable forest planning, implementation and monitoring is conducted in an open consultative fashion, with input from all members of the planning team, Local Citizens Committee, native groups, and other parties with an interest in the operations of the forest unit.
3. Forest Management Planning
The forest management planning process involves the input of a number of individuals and groups to describe the current condition of the forest, the values and benefits to be obtained from the forest, the desired condition of the forest in the future, and the best methods to achieve that goal. Certain minimum standards and procedures have been established upon which all management units are evaluated.
4. Plan Implementation
Verification of the actual results of operations in the field compared to the planned operations is required to be able to assess achievement of the plan objectives and compliance with laws and regulations. In conjunction with the review of operations, the reporting tables are tested to ensure accurate results are reported.
5. System Support
System support concerns resources and activities needed to support plan implementation so as to achieve the desired objectives. Appropriate control, documentation and reporting procedures must be in place and operational. Planned action should occur at planned times, in planned places and to the planned degree.
6. Monitoring
The activities and the effects of these activities in achieving management objectives must be regularly measured and assessed. In particular, the indicators of achievement must be assessed and their effectiveness reviewed.
7. Achievement of the Management Objectives and Forest Sustainability
Periodic assessments of the management of the forest unit operations and the forest unit must be made in order to determine whether forest sustainability and other management objectives are being achieved. This includes comparing the actual values of the predetermined indicators against the planned values and assessing the reasons for any significant deviations.
8. Contractual Obligations
The licensee must comply with the specific licence requirements.

Appendix D
List of Acronyms

List of Acronyms

ACI	Abitibi Consolidated Company of Canada
AHA	Available Harvest Area
AOC	Area of Concern
AR	Annual Report
AWS	Annual Work Schedule
CEA	Certified Environmental Auditor
CFSA	Crown Forest Sustainability Act
CLUAH	Crown Land Use Atlas Harmonization Project
CLUPA	Crown Land Use Policy Atlas
EMS	Environmental Management System
FFC	Forestry Futures Committee
FMA	Forest Management Agreement
FMB	Forest Management Branch
FMP	Forest Management Plan
FMPM	Forest Management Planning Manual
FOCIS	Forest Operations Compliance Inspection System
FOIP	Forest Operation Information Program
FOP	Forest Operation Prescriptions
FRI	Forest Resource Inventory
FRT	Forest Renewal Trust
FRWCI	Forest Roads and Water Crossing Initiative
FTG	Free-to-Grow
GIS	Geographic Information System
HAC	Hornepayne Aboriginal Community
HPA	High Priority Aspects
IEA	Individual Environmental Assessment
IFA	Independent Forest Audit
IFAPP	Independent Forest Audit Process and Protocol
KBM	KBM Forestry Consultants Inc.
LA	Lead Auditor
LCC	Local Citizens Committee
LSP	Large Scale Aerial Photography
MAFA	Moose Aquatic Feeding Area
MNR	(Ontario) Ministry of Natural Resources
MOE	Ministry of the Environment
MOU	Memorandum of Understanding
NAWOA	North Algoma Wilderness Outfitters Association
NBIR	Native Background Information Report
NDPEG	Natural Disturbance Pattern Emulation Guide
NESMA	Northeast Seed Management Association
NFML	Nagagami Forest Management Limited
NRVIS	Natural Resource Values Information System
NSR	Not Sufficiently Regenerated
PLA	Public Lands Act
RPF	Registered Professional Forester
RPFO	Report of Past Forest Operations
RPNV	Report on the Protection of Native Values
RSA	Resource Stewardship Agreement
SEIM	Socio-Economic Impact Model
SEMMO	Silvicultural Effectiveness Monitoring Manual for Ontario
SFL	Sustainable Forest Licence
SFM	Sustainable Forest Management
SFMM	Strategic Forest Management Model
SGR	Silviculture Ground Rule
SMA	Selected Management Alternative
TAR	Comparison and Trend Analysis of Planned versus Actual Forest Operations

Appendix E
Summary of Input to the Audit Process

Summary of Input to the Audit Process

General Public and Other Stakeholders: KBM solicited input into the audit via newspaper advertisements and direct mailings to persons and organizations on MNR's mailing list for the Nagagami Forest. A summary of comments that could be addressed during the audit are presented below.

Issue or Comment	How Issue was Addressed by the Audit Team
Trappers concerns must be addressed, i.e. martin core must be preserved.	Reviewed planning associated with marten management and implementation of riparian buffers.
Excessive restrictions on access roads. Poor management practices. Has had a lot of contact with MNR and NFM - not happy with results.	Reviewed access management issues on the Forest.
Sent letters through the Local Tourism to the MOE on each management plan. Has not been happy with response. Forest company has made efforts to be fair to resource-based tourism and access mgt., but there are members of the LCC who cannot see the "big picture" for management.	Reviewed issues related to resource-based tourism.
Good management practices are happening on the entire land base, in particular with stream crossings. Examples of these are on Hornepayne Creek and Stoney Creek.	Examined field practices including water crossing installations.
Location of secondary roads which have created public access and in turn eliminated business opportunities.	Reviewed access management issues of the Forest.
Too many roads in the Nagagami are closed to the public. Too many lakes have been classified as "Remote Tourism" and made inaccessible to the public.	Reviewed access management issues of the Forest.

Local Citizens Committee: On the evening of September 24, 2007 members of the audit team met with the Resource Management Advisory Committee (RMAC). Comments centered on the issue of public use of forest access roads, which is discussed in detail in the audit report. Conducted a phone interview with the LCC Chair and also spoke to six members including the chair of the LCC following the meeting. A representative of the LCC participated in the field audit.

Native Communities: The audit team spoke to a representative of the Hornepayne Aboriginal Community. According to the representative, Community members are generally happy with management of the Forest. The Chief of the Community had expressed concern during planning about ongoing road access, which is discussed in the audit report. Repeated attempts to acquire input from Constance Lake First Nation were unsuccessful.

Contractors and Commitment Holders: The audit team spoke with representatives of Columbia Forest Products; Longlac Wood Industries, Olav Haavaldsrud Timber Company and Weyerhaeuser. Comments were generally positive in nature.

SFL Holder: NFML provided significant input and support to the audit process. This included providing background information and participating in the pre-audit meeting, field audit and interviews. Staff included the SFL Manager and operations and administrative staff. This allowed for a detailed review of the history and effectiveness of operations. The closing meeting was well attended by NFML staff and shareholders.

Ministry of Natural Resources: MNR Wawa District staff, including the District Manager, Area Forester, Area Supervisor, Area Biologist and Area Technicians provided input, information and support to the audit at all stages of the audit.

The Forestry Futures Analyst participated in the pre-audit and closing meetings and was present during a portion of the field audit, as were representatives of MNR Forest Management Branch.

Appendix F
Public Notification

NAGAGAMI FOREST INDEPENDENT FOREST AUDIT

KBM Forestry Consultants Inc. of Thunder Bay, Ontario has been retained by the Ontario Ministry of Natural Resources to conduct an Independent Forest Audit.consistent with the Crown Forest Sustainability Act on the management of the Nagagami Forest. The purpose of the audit is to assess forest management activities within the Nagagami Forest during the five-year audit period from April 1, 2002 to March 31, 2007. Specifically:

- compliance with the Crown Forest Sustainability Act;
- compliance with the Forest Management Planning process;
- a comparison of planned versus actual forest management activities;
- the effectiveness of forest management activities;
- the effectiveness of previous audit action plans; &
- compliance with the terms and conditions of the Sustainable Forest Licence.

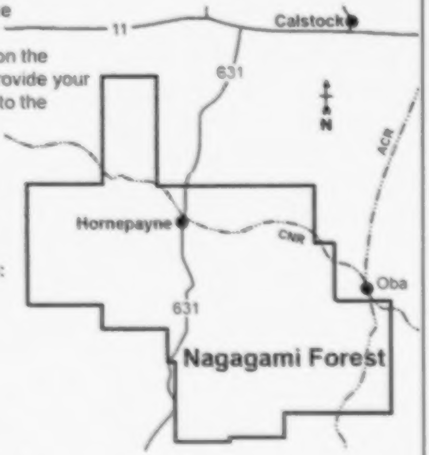
You are invited to comment on forest operations on the Nagagami Forest for this period of time. Please provide your comments by **Friday, September 7, 2007** directly to the Local Citizens Committee:

Nagagami Forest LCC Chair
Margaret Zajac
Email: marg@haavaldsrud.com

The privacy of information given to the LCC may not necessarily be protected.

Alternatively, comments can be sent directly to:

Sonia Colombo
KBM Forestry Consultants Inc.
349 Mooney Avenue
Thunder Bay, ON P7B 5L5
Tel: 807-345-5445 ext. 234
Fax: 807-345-3440
Toll Free: 1-800-465-3001
Email: scolombo@kbm.on.ca



All correspondence sent to KBM is strictly confidential.

For more information or to download and complete our public audit survey please visit: www.kbm.on.ca

Appendix G
Public Survey

KBM FORESTRY CONSULTANTS INC.
2007 INDEPENDENT FOREST AUDIT
PUBLIC SURVEY

Every five years, as part of the Province's responsibility for resource management in Ontario, the Ministry of Natural Resources (MNR) contracts firms to evaluate forest management activities on Crown lands. KBM Forestry Consultants Inc. of Thunder Bay, Ontario has been engaged by the MNR this year to conduct an independent forest audit of the Nagagami Forest for the period 2002-2007.

As part of our evaluation, we would appreciate your input as a member of the public with an interest in forest management on the Nagagami Forest. If you have comments related to forestry activities during the five-year period April 1, 2002 to March 31, 2007, please complete and submit this form (please see back of sheet for more information on the audit process).

KBM provides this opportunity to comment on the Nagagami Forest audit, under the authority of Ontario Regulation 160/04 made under the Crown Forest Sustainability Act, 1994. Any personal information provided will be used solely by the audit team as input to the Nagagami Forest Independent Forest Audit. Any questions regarding the collection, use, and retention of the personal information can be directed to Rod Seabrook, Lead Auditor at 807-345-5445 ext. 261 (email: rsea@kbm.on.ca) or to the company address indicated below.

Name:
(optional)

Tel. and/or email:
(optional)

What is your interest in forest management on the Nagagami Forest?

Recreation ☐
Employment (forestry, tourism, etc.) ☐
Conservation ☐
Other: ____________________

Can you identify any specific locations or activities on the Nagagami Forest that illustrate good OR poor management practices, and that the audit team should be aware of in conducting their evaluation? Please provide details.

Have you ever contacted forest managers with comments or concerns during the 2002-2007 audit period?
(e.g. local Ministry of Natural Resources, Nagagami Forest Management Ltd.) ☐**Yes** ☐**No**

If yes, were you satisfied with the response? ☐**Yes** ☐**No**

Feel free to add any additional comments (use additional sheet if required).

6. Please indicate if we may contact you for more information. ☐**Yes** ☐**No**
(If Yes ensure that you have provided your contact information above.)

Please **mail, email, or fax** the completed survey (Attention: Sonia Colombo) to the address/fax number below by **Tuesday, July 31, 2007**.

The survey can also be accessed through our website, located at www.kbm.on.ca

Although we cannot respond to everyone, we do take into consideration all comments received.
THANK YOU IN ADVANCE FOR YOUR INPUT.

INDEPENDENT FOREST AUDIT

Nagagami Forest

KBM Forestry Consultants Inc. has been retained by the Ministry of Natural Resources (MNR) to conduct an Independent Forest Audit, consistent with the Crown Forestry Sustainability Act, on the management of the Nagagami Forest.

The audit covers the April 1, 2002 to March 31, 2007 operating period. You are invited to comment on the forest management activities on the Nagagami Forest for this period of time. Please mail, email, or fax this form to:

Sonia Colombo
KBM Forestry Consultants Inc.
349 Mooney Ave., Thunder Bay, ON P7B 5L5
scolombo@kbm.on.ca
Tel: (807) 345-5445 ext. 234
Fax: (807) 345-3440
Toll-Free: 1-800-465-3001

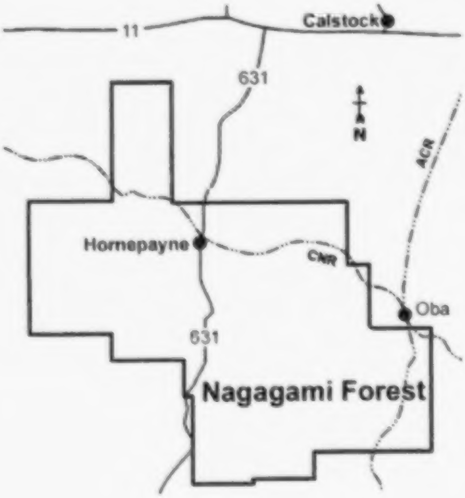
(All correspondence sent to KBM is confidential).

Alternatively, comments can be made directly to the Local Citizens Committee Chairperson:

Margaret Zajac, Chair
Nagagami Forest Local Citizens' Committee
Email: marg@haavaldsrud.com
P.O. Box 607
Hornepayne, ON
P0M 1Z0

(The privacy of any information given to the LCC may not necessarily be protected).

Comments must be received by
Tuesday, July 31, 2007.



Purpose of the Independent Forest Audit

The Purpose of the audit is to assess:

- compliance with the *Crown Forest Sustainability Act*,
- compliance with the Forest Management Planning Process,
- a comparison of planned versus actual forest management activities,
- the effectiveness of forest management activities in achieving audit criteria and management objectives,
- assess the effectiveness of previous audit action plans, and
- where applicable, a licensee's compliance with the terms and conditions of the Sustainable Forest Licence.

The six-member audit team will evaluate forest management planning and practices such as harvest operations, forest renewal activities, road construction and maintenance as well as opportunities for public input and First Nations consultation. The main objectives of the audit are to assess compliance with provincial laws and regulations as well as comment on the effectiveness and sustainability of forestry activities on the management unit.

In addition, the independent forest audit provides an opportunity to improve Crown land management in Ontario through adaptive management. The audits are conducted by consultants that are independent of the Ministry of Natural Resources and the companies being audited, and firms are selected in an arms-length process by the Forestry Futures Committee of Ontario.